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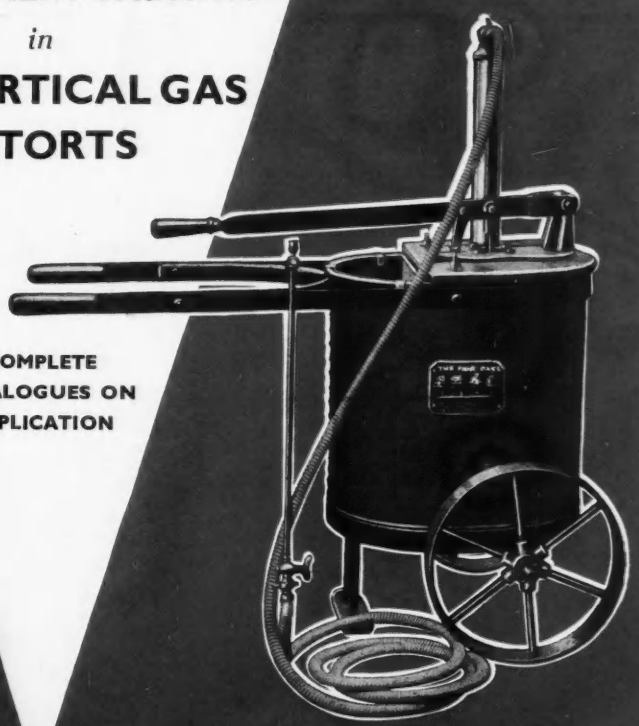

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Fig. 705. "SINGLE-RAM" STEAM-PUMP.

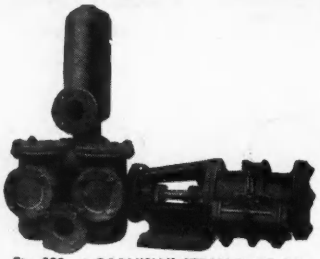

Fig. 598. "CORNISH" STEAM-PUMP FOR BOILER FEEDING, &c.

Fig. 712. "DOUBLE-RAM" STEAM-PUMP.

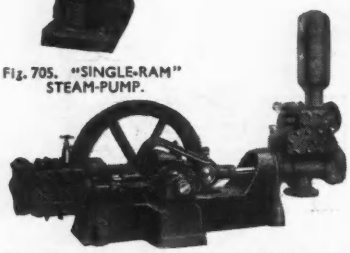

Fig. 680. "RELIABLE" PUMPING ENGINE FOR THIN TAR, AMMONIACAL LIQUOR, BENZOLE, LIGHT, OILS AND WATER

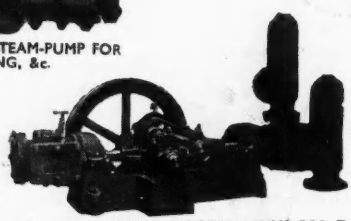

Fig. 685. "RELIABLE" STEAM-PUMP FOR TAR AND ALL THICK FLUIDS.

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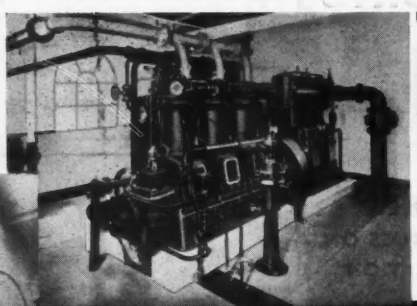

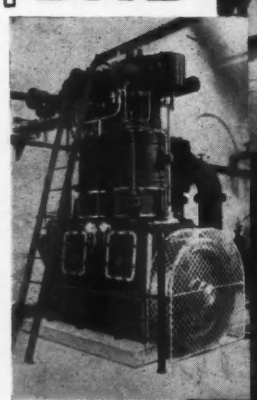

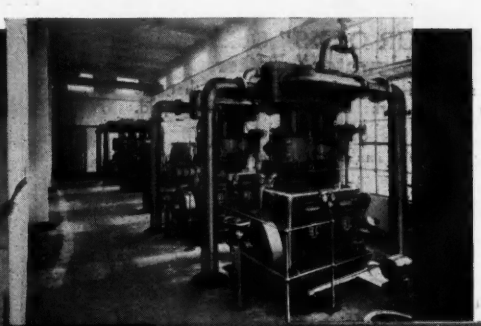

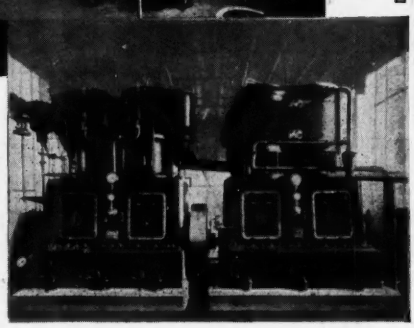

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CONTENTS

Annual Review of 1941.

A World at War 491
A Wonderful People 491
More—and Ever More 491
Directorate of Gas Supply 491
National Gas Council 492
Legislation 492
Coal 492
Post-War Planning and Reconstruction... ... 493
The Institution of Gas Engineers 493
Education 493
The Gas Research Board 493
The S.B.G.I. 494
Supply of Materials 494
Export Trade 494
The B.C.G.A. 497
Community Feeding 497
Advertising and Editorial Publicity 497
Internal Organization 497
The Industry in Scotland 497
Technical Developments 498
Coke 498
By-Products 501
Tar Products 501
Technical Literature 502
Stocks and Shares 502
Obituary 502

Personal 505
Obituary 505
Letters to the Editor 505

Gas Products Prices 507
Gas Stocks and Shares 507

THIS WEEK'S ADVERTISERS

PAGE

Alder & Mackay, Ltd. 508
Bale & Church, Ltd. 509
Birmingham Electric Furnaces, Ltd. 489
Blakeley, Firth, Sons & Co., Ltd.... 509
Boulton Tubular Structures, Ltd. 484
Braddock, J. & J. 499
Bratt Colbran, Ltd. 479
British Furnaces, Ltd. ... Cover IV
Chaseside Engineering Co., Ltd. 478
Clapham Bros., Ltd. 480
Clarke, Cluley 508
Cowan, W. & B. ... ... Cover III
Cutler, Samuel, & Sons, Ltd. ... 503
Dempster, Robert, & Sons, Ltd. 509
Donkin Co., Ltd. (The Bryan) Cover II
Ellison Insulations, Ltd. 509
Evans, Joseph, & Sons (Wolverhampton), Ltd. ... ... Cover II
Fluxite, Ltd. 510
"Four Oaks" Spraying Machine Co. ... ... Cover I
Gas Meter Co., Ltd. 487
Gas Purification & Chemical Co., Ltd. 509
Gibbons Bros., Ltd. 482
Glover, George, & Co., Ltd. ... 477
Glover, Thos., & Co., Ltd. ... 490
Goodall, Clayton & Co., Ltd. Cover IV
Grant, David & Co., Ltd. ... 509
Green & Boulding, Ltd. 510
Harrisons (London), Ltd.... ... 509
Holmes, W. C., & Co., Ltd. ... 511
Humphreys & Glasgow, Ltd. ... 488
Keith, Blackman, Ltd. 512
Kings Patent Agency, Ltd. ... 509
Macpherson, Donald, & Co., Ltd. 484
Main, R. & A., Ltd. 500
Manchester Oxide Co., Ltd. ... 483
Menno Compressed Air Greasecup Co., Ltd. 509
Mewburn, Ellis & Co. 509
Ministry of War Transport ... 504
Mitchell, H., & Co. 486
Newton Chambers & Co., Ltd. 496
Parkinson, W., & Co. 490
Pulsometer Engineering Co., Ltd. Cover IV
Radiant Heating, Ltd. 486
Radiation, Ltd. 485
Reavell & Co., Ltd. 486
Siebe, Gorman & Co., Ltd. ... 486
Strachan & Henshaw, Ltd. ... 477
Sutherland Meter Co., Ltd. ... 481
Thomas & Bishop, Ltd. 507
Trotter, Haines & Corbett, Ltd. 509
Turbine Furnace Co., Ltd. ... 508
Underpressure Engineering Co., Ltd. 510
Walker, C. & W., Ltd. 503
West's Gas Improvement Co., Ltd. 506
Woodall-Duckham Co., Ltd. ... 495
Wright, Alex., & Co., Ltd. ... 487

Appointments Vacant 510
Patents 509
Plant, &c. 509
Plant, &c., For Sale and Wanted 510

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GAS JOURNAL, DEC. 31, 1941

VOL. 236. 93rd YEAR No. 4102

1941

A World at War

WHENEVER, and however, the period may arrive at which it will be possible to pronounce a comprehensive and strictly accurate judgment upon the facts, what will fall to be recorded with regard to the happenings of the year which is now passing? If, as was remarked by us twelve months ago, 1940 was a term which included neither a beginning nor an end, can anything much more conclusive be said with regard to 1941? Not, perhaps, at the moment, or so long as the world remains at grips with the forces that have been unloosed upon it. Yet, when distance does permit the events of 1941 to be seen in perspective, it may well prove that these events constituted the turning-point in the long road of suffering and sorrow that has been imposed upon countless millions of peace-loving people. Already the world has paid in blood and treasure a price that should have been sufficient to ensure a Hundred Years' Peace; nevertheless there is continued, and ever more intense, warfare. However, while the conflagration has steadily spread, we in this country have been adding unceasingly to our fighting strength, with results which during the latter months of the year have been making themselves more and more evident.

It is true that, looking back to the early days of the war, one cannot avoid a feeling that there was something of the miraculous in the preservation of this country during those anxious times. The darkest of these early days had passed before the advent of the year now closing, but it was not until two months or so ago that General Lord Gort's despatches on the 1940 campaign of the British Expeditionary Force in France and Flanders brought home to the people at large, chapter and verse, the facts surrounding the peril in which we had stood. They know now that "it was clear from the outset that the ascendancy in equipment which the enemy possessed played a great part in the operations." An old, old story, alas, but one which the present year has done much to put out of date! While the epic of Dunkirk remains in their hearts, the war workers will keep the lesson in their minds. Modern armies "march on their equipment!"

A Wonderful People

IF the conduct of the Navy, the Army, and the Air Force—all the fighting services—has been worthy of its high traditions, as it has, no less should be said of the Home Front. Day by day come thrilling stories of the deeds of heroes—heroes in all sections of life; deeds of most amazing courage by men and women who place their duty to their country and their fellows before aught else. At the works, in the Forces, in every conceivable kind of circumstance, these Golden Deeds have shone forth—and the Gas Industry, to say the least, has not been behind others either in the number or the merit of the examples it has furnished. The many awards for bravery made to all grades of gas worker are indicative of this.

The very dawn of 1941 fell upon the still smoking ruins to which a substantial part of the heart of London had been reduced forty-eight hours earlier. Following upon some six months of air raids of growing intensity over Great Britain, on the night of Dec. 29, 1940, in addition to many other important buildings, Guildhall, in the City of London, suffered the most grievous damage. There were to be many subsequent raids, of course—one of which destroyed the debating chamber of the House of Commons, and somewhat damaged Westminster Abbey—and these, in fact, have continued, in one part of the country or another, though latterly greatly reduced in intensity, until the present time. The converse has been true of our own activity in the air, which, in strict conformity with the promise of the Prime Minister, has been upon a steadily ascending scale. So wonderful, indeed, has been the transformation that Mr. Winston Churchill felt himself in a position, at the Lord Mayor's luncheon in November, to give a most heartening account of what has been accomplished. He said then that "we may give thanks to Almighty God for the many wonders which have been wrought in so brief a space of time, and we may derive fresh confidence from all that has happened."

Such a statement, coming from the implicitly trusted head of our Government, must have been, to a tried but wonderful people, of a value far beyond rubies. It was just the sort of tonic for which so many had been waiting for so long. There had been many trials, both big and small, during the year, and, though nothing that happened had been able to shake the courage of the nation, anxiety—not as to the "end," but with regard to the "means"—could not be absent altogether. Many there are, unhappily, who have already suffered the most grievous losses through death, and many more who have had inflicted upon them fearful injuries. To all these deep sympathy goes out. At the other end of the scale there have been doubtless some who from time to time have been feeling more than a trifle overweighted by lectures upon the evils of "complacency," and "warnings" against this, that, and the other—necessary, of course, in due proportion, but on occasion possibly more suitable for address to leaders than to followers, whose freedom of action has been so drastically circumscribed by wartime requirements. More trials there are to come; more disappointments there may be in store; but the tonic optimism of Mr. Winston Churchill, and the emphasis that has been given to it by subsequent happenings, will assist a loyal and united people to overcome successfully all obstacles.

More—and Ever More

IT has been a busy year, though not busy enough; for the demand has manifested an unfailing tendency to increase more rapidly than the rate of production of war materials, in addition to which the needs of the Services in regard to personnel make unceasing demands upon the population. Therefore, good as has been the effort of 1941, that of 1942 must be still better. Changed conditions are largely the reason for this. Six months ago, the whole outlook was transformed through the invasion of Russia by huge armies, which are now on blood-soaked ground, undergoing all the rigours of a northern winter, while our allies, the Russian soldiers, are meeting aggression in a manner which excites world-wide admiration. Soviet resources are immense, but the fighting front is of prodigious length, and the aggressors started the campaign fully prepared, as it must have seemed to them, against any eventuality. The people of this country have shown unmistakably their determination that all practicable help is to be given to Russia. Nothing will be permitted to interfere with this, even though a grievous fresh burden may have been placed upon us now through the latest transformation of the situation by events in the Far East. At long last Japan has set out upon the path that she is now to tread until the end, and the United States have been brought fully into the world war, after having already extended to us, and to Russia, invaluable help in equipment and supplies. Again, aggression has succeeded in plucking some of the first fruits of surprise; and, again, there have been warnings of the danger of under-estimating the strength of one's opponents. The danger of doing this must be obvious, but, on the other hand, is not a position equally conceivable in which it might be even more dangerous to under-estimate the greatness of our own power, of our own resources, and of our own determination? Developed to the full, as they will be—indeed, as they are being—these factors will ensure us victory, but only in co-operation. War workers, strictly defined, though they could lose us the war, cannot by themselves win it. The same may be said of those set in authority over us. Further, triumph is not to be "bought," though a vital part is being played by the phenomenal financial contributions, amounting, for "small savers" alone, to well over £1,000,000,000 in two years, and to more than £12,000,000 a week for the past twelve months, in spite of hampering levels of taxation.

Precisely what the future may hold—to borrow a phrase that has become dear to the hearts of commentators upon the war situation—"remains to be seen," but we repeat that our power, our resources, and our determination, utilized with 100% efficiency, will lead us to victory. More—and ever more—is to be demanded of us; but it would seem a mistake to apply to these greater efforts the term "greater sacrifices." Rather would we suggest that everything additional done now to help the common cause should be regarded as a further premium of insurance against a far less desirable alternative.

Directorate of Gas Supply

AMONG matters of importance to the Gas Industry reference must first be made to the changes which have recently taken place in the Gas Administration of the Board of Trade. In October an announcement was made that the functions in relation to electricity previously exercised by the Minister of War Transport had been transferred to the Board of Trade, and that the Board had also had under review the reorganization required for the exercise of their functions in relation to the Gas Industry. There has, in consequence, been set up a new Division in the Industries and Manufactures Department to carry out the Board's functions in relation to both industries. In addition there has been created a Directorate of Gas Supply to deal with immediate questions relative to the public supply of gas to nationally

essential factories, and also to advise on the steps to be taken to secure the progressive development of the Industry as a public service. Dr. E. W. Smith, C.B.E., has been appointed Director-General of Gas Supply, and he has the assistance of others possessing wide and intimate knowledge of the Industry.

Such are the bare facts. Full discussion of various aspects of the matter, and of the great possibilities which it holds for the Gas Industry, has so recently taken place in the Editorial columns of the "JOURNAL" that further detail would be superfluous in this Review. Suffice it to say that the creation of the new Directorate is a bright augury for the future of the Industry, signifying recognition by the Government, tardy though it be, of the vital national importance of gas supply. The need for a drastic reconstruction of the Industry had for long enough been in the minds of most of its leaders, and the Directorate, composed of men who know and understand the Industry to the smallest detail, is capable of providing just the focal point around which to translate ideas into action. With the help of the Directorate, but mainly by its own efforts, the Industry has what is probably the last chance of shaping its own destiny. Upon those efforts will certainly depend the place which it is to occupy in the national fuel policy of the future.

National Gas Council

To give an account of the activities of the National Gas Council during the year and, at the same time, to comply with the insistent demand for economy in the use of paper, necessarily involves the most drastic compression, for the work done in 1941 transcends both in volume and importance that of almost any of its predecessors. It is not possible, therefore, to do more than deal in some little detail with the major matters which have engaged the Council's attention, and refer quite briefly, and without any claim to be exhaustive, to others.

In the field of legislation the War Damage Act was the only Public General Statute which directly affected the Industry, but the outflow of Orders dealing with a great variety of subjects continued unabated, and all of them demanded careful study and, in many cases, action of one kind or another. The unsuitability of the War Damage Act to meet the special needs of public utility undertakings was apparent as soon as the Bill appeared, and the Council, acting with the Conjoint Conference of Public Utility Associations, represented to the Government that gas, water, and electricity should, save in one particular, be excluded from its operation. These representations were so far unsuccessful in that theoretically public utility undertakings are, for the time being at least, covered by Part I of the Act which relates to immovable property, but are not liable to pay contributions nor are they entitled to receive compensation thereunder. They are, however, entitled to receive grants in respect of urgent repairs rendered necessary by war damage. The Act also enables goods belonging to statutory public utilities, which are not insurable under the Commodity Insurance Scheme, to be insured under the Business Scheme set up by Part II of the Act. Non-statutory undertakings, on the other hand, though for the purposes of Part I regarded as in the same category as statutory undertakings, must, as the law stands at present, insure their chattels. It was, however, admitted on behalf of the Government, that the Act was in many respects not suited to the requirements of the public utilities represented by the Conference, and a promise was given that the interests concerned would be consulted before the special legislation dealing with public utilities in general was introduced. Since then both the Conference and the Council have, by means of correspondence and meetings with Government officials, been endeavouring to ensure that the promised legislation will deal adequately with the special needs of gas, water, and electricity.

In response to a statement submitted by the Treasury and containing proposals to the effect that each class of utility should be dealt with separately and should bear, from a fund raised by a contribution levied upon individual undertakers, one-half of the cost of the war damage suffered by the class, the other half being met by the Government, the Conference has intimated acceptance in principle. In the meantime, negotiations between the Council and the Treasury and also between the Conjoint Conference and the Treasury are proceeding, in the course of which further consideration of the various points raised has been promised.

Legislation

OF the Orders referred to, those dealing with gas charges have affected gas undertakings both directly and adversely. In May, no doubt in conformity with the Government's policy of keeping down prices, but regardless of the fact that owing to increased costs of labour and coal the cost of gas production had greatly increased, the Board of Trade made an Order prohibiting gas undertakings from raising the price of gas except under the authority of a licence issued by the Board. Many undertakings which applied for a licence were refused, and the Central Executive Board at once lodged a protest with the Chancellor of the Exchequer and the President of the Board of Trade, and asked that if the ban was to be maintained a subsidy should be provided for those undertakings whose financial position had been rendered serious, and in some cases precarious, owing to the war. These representations led to the issue in June of a second Order granting a general licence to those undertakings which were supplying gas under contracts, which provided that the price of gas should vary with the price of coal, or according to the quantity of gas supplied during any period.

This Order eased the position of some undertakings, but as there had been no response to the request for some form of subvention for others which were hard pressed, the Central Executive Board made further representations to the Board of Trade to the effect that, pending the regulation of the whole position, a further General Licence should be issued authorizing increased charges for gas for all industrial purposes. The pressure thus exercised resulted in the grant of a General Licence permitting undertakers to increase the price of gas supplied to any factory which, during the preceding year, consumed not less than 150,000 cu.ft. In October some change of attitude at the Board of Trade was evidenced by the issue of a certain number of individual licences authorizing increases up to specified limits, but the situation is far from satisfactory, and at a recent interview with the President, when the case was very strongly put to him, a promise of further consideration was given.

The Gas Supply (War Damage) Orders formed another series which entailed considerable negotiation with the Board of Trade, but the latest of them, that of April, 1941, gave effect to a great extent to the representation made on behalf of the Industry by the Central Executive Board in that it frees from his statutory obligation to supply gas of a declared calorific value any undertaker who, owing to specified causes arising from enemy action or cognate circumstances, has been unable to maintain the declared standard.

Other Orders which affect undertakings to a greater or less degree are those relating to the control of various commodities, such as iron and steel, tar, timber, and fertilizers, while there have been some relating to Civil Defence matters, and, in particular, the Fire Prevention (Business Premises) (No. 2) Order which became operative in September. All these and many other Orders have been carefully considered by the Council. Where necessary, representations in regard to them have been made to the Department concerned, and in all cases members have been informed of them, and where difficulties of interpretation or application have been anticipated or experienced advice has been made available.

Coal

THE coal situation has been a continuous pre-occupation of the Council throughout the year. The difficulties in regard to supplies encountered in the early months having been overcome as the result of strenuous efforts of the Public Utilities Coal Committee, it was hoped that the spring and summer would see stocks replenished. It soon became evident, however, that, owing to a variety of causes, the building up of stocks for the coming winter was going to prove a most serious problem. Representations to the Mines Department and to the Government became more frequent and more urgent, and many discussions took place as to the means of remedying the position. The rationing of gas and other fuels was seriously considered by the Mines Department, despite the cogent arguments of the National Gas and Electricity Committee that the scheme suggested was unsound and unworkable. Fortunately an improvement in output from the pits, and the making of transport arrangements designed to meet the needs of undertakings whose position was precarious, together with the fuel economy campaign, rendered it unnecessary to put any system of compulsory rationing into operation; but though the situation is better than could have been expected, it still presents many unsatisfactory features. For example, as a direct result of the fact that undertakings have often to take what coal they can get and not what they want, they frequently find that the quality is such as to make it extremely difficult, if not impossible, to maintain consistently the declared calorific value of the gas which they supply. The Central Executive Board pointed out to the Board of Trade that, as quarterly deficiencies which are thus caused are entirely beyond the control of undertakers, it was unfair that the statutory penalties should be exacted, and it was suggested that the system of tests might be modified. The Board of Trade took the view, however, that action under the Defence Regulations was not justified, and that, even if it were possible to introduce legislation on the subject, Parliament would reject proposals for waiving the consequences of deficiencies save in the circumstances set out in the Gas Supply (War Damage) Order, 1941.

Other difficulties might be cited, but it is enough to say that the Council is doing all it can to mitigate the hardships and inconveniences experienced by members owing to wartime conditions. *Inter alia*, efforts are being made to secure a subsidy for those undertakings which are obliged to pay increased transport charges for coal brought from districts other than those from which in normal times they draw their supplies.

Other questions relating to coal have proved troublesome. The alteration of the standard conditions of contract by those responsible for certain District Selling Schemes, without any previous consultation with the public utilities, caused protest. Subsequent negotiations, however, happily ended in a modification of the conditions complained of.

On the subject of demurrage more or less of a deadlock exists despite frequent attempts to reach a general settlement. The Railway Companies stand by the letter of the Demurrage Order, whereas gas undertakers, relying on the assurance given by the Minister of Transport when the Order was before Parliament, decline to pay demurrage charges in cases of genuine difficulty within the meaning of the Minister's assurance.

Post-War Planning and Reconstruction

WHILE the problems of the present are being dealt with, those of the future are not being forgotten, and on the initiative of the Central Executive Board a special Committee, representative of the National Gas Council, The Institution of Gas Engineers, the British Commercial Gas Association, and the Society of British Gas Industries has been set up and placed under the aegis of the British Gas Federation to collate information and formulate suggestions for post-war planning so far as it concerns the Gas Industry. The work of this Committee is of particular significance, not only because of the changes in the system of Gas Administration at the Board of Trade, but also because of the work which is being done under the direction of the Minister of Works and Buildings with regard to national planning and reconstruction. So far as the latter is concerned the Council is in close touch through the Conjoint Conference with the Committee on Compensation and Betterment set up by Lord Reith under the Chairmanship of Mr. Justice Uthwatt, that body having asked the Conference to furnish the views of the public utilities which it represents on a variety of matters covered by its terms of reference. After very careful consideration a Memorandum, representing the general views of the Conference in so far as they can be reached in the absence of fuller information as to the Government's intentions with regard to major questions of policy, has been drawn up and submitted to the Committee.

The Memorandum maintains that it is imperative that the public utilities, which touch the national life at a very great number of points, should form part of the actual machinery of planning, and for that purpose should be represented upon both the Central and Regional Planning Authorities. It also points out that in relation to the suggested acquisition of development rights of "undeveloped land" and also to questions of betterment, the public utilities represented by the Conference stand in a peculiar position which requires special consideration and treatment.

The Institution of Gas Engineers

THE work of the Institution has been actively continued, with such modifications as have inevitably been imposed by prevailing conditions. The Institution is maintaining its close collaboration, either directly or through the Gas Research Board, with Government Departments, in order that the technical information and resources of the Gas Industry may be at all times at the disposal of the Government for the furtherance of the national war effort. The Council of the Institution has met regularly during the year, although the meetings of some of its Technical Committees have had to be curtailed. The Institution has, however, kept its members and gas undertakings informed, by circulating memoranda and otherwise, of technical developments, Orders and recommendations, specifications and the like, with particular reference to wartime conditions.

Although the 77th Annual General Meeting had to be cancelled in 1940, the Council decided to hold the 78th this year in an abbreviated form. A one-day meeting was accordingly held on June 11, when a Symposium, "The Gas Industry, 1941 and After," consisting of nine short Papers, was presented and discussed. The President's luncheon was held on the same day. The attendance at the meeting was extremely gratifying, and the innovation of having a number of short Papers dealing with current and future problems in the Gas Industry was welcomed. A lively and interesting discussion took place.

At the conclusion of the Meeting Mr. George Dixon, B.Eng., relinquished the Presidency of the Institution, which he had occupied, under exceptionally difficult conditions, since June, 1939. He was succeeded as President by Sir Frederick J. West, C.B.E., J.P. The two Vice-Presidents are Mr. E. V. Evans, O.B.E., F.I.C., and Mr. James Jamieson.

The Council was unanimously of the opinion that certain of the Papers and points arising from their presentation and discussion should be followed up immediately, and it accordingly appointed four Committees of Enquiry to consider these matters, to take such evidence as they thought fit and to report thereon to the Council as soon as practicable. The membership and terms of reference of these Committees, which deal respectively with Gas Quality, Sulphur Removal, Standardization of Domestic Appliances, and Coke Quality, were published in full in the "JOURNAL" of Sept. 17. The Committees began their deliberations at the beginning of September, and they have already made considerable progress. Their Reports to the Council should constitute a valuable contribution to the consideration of post-war planning.

The Institution Medals, which were presented at the Annual General Meeting, were awarded as follows: the Gold Medal to T. R. Cook (Blackpool); the Silver Medal to R. L. Greaves (St. Helens); the Bronze Medal to S. H. Stokes (Hyde).

It is gratifying to record a further increase in the membership of the Institution, which is now 1,810 compared with 1,782 at this time last year. The Institution has this year lost by death 17 members, including two Past-Presidents, H. D. Madden (Cardiff; President, 1927–28) and R. G. Shadbolt (Birmingham; President, 1911–12), and one member on active service with the Royal Air Force. Sixty-seven members are known to be serving with H.M. Forces. Mr. Stephen Lacey has been appointed Honorary Auditor in succession to the late Mr. H. D. Madden.

A first step has now been taken with a view to making effective the recommended scale of minimum commencing salaries for chief engineers and chief assistant engineers, and appropriate action has been taken by the National Gas Council to bring these scales to the notice of those concerned.

The good work of the Committee of Management of the Benevolent Fund continues, but is again severely limited by insufficient income of the Fund.

The Library Committee has continued to review the upkeep of the Library. A number of new works have been purchased, while steps have been taken to safeguard some of the older books and the more important records of the Institution.

The work of the Technical Committees of the Institution is briefly reviewed in the Second Report of the Chairman's Technical Committee. Particular reference may be made to the work of the Gas-Works Safety Rules Committee, which has met regularly during the year and has been mainly concerned, in co-operation with the appropriate Government Departments, with matters relating to air-raid precautions and to the work of the Domestic Heating Committee, which has dealt with matters relating to recent and future developments in domestic heating (*e.g.*, comfort conditions, ventilation, district heating, &c.) in particular relation to post-war planning. It is not possible to refer as fully as could normally be done to the work of the Technical Committee, much of which has resulted in the preparation of confidential memoranda.

The Institution Gas Research Fellowship Report, 1939–40, and an Interim Report, 1941–42, are in course of publication, The present holder of the Institution Gas Research Fellowship at Leeds University is J. E. Garside, Ph.D.

The Second Arthur Duckham Research Fellow (E. C. W. Smith, Ph.D) has continued at Leeds University his investigation of luminescence phenomena, but the publication of his Report for the past year has been temporarily deferred.

Education

THE number of candidates for the Institution's examinations this year showed a further decline. The perseverance of those who continued their studies, often under very difficult conditions, deserves commendation. There were 158 candidates for the Examinations in Gas Engineering (Manufacture) and (Supply) compared with 279 in 1940 and 470 in 1939. Sixty-five % of the candidates were successful compared with 67.5% last year. Twenty-six obtained first-class passes, six with distinction. There were 12 candidates for the Diploma Examinations, of whom 7 were successful, 6 obtaining the Diploma in Gas Engineering (Manufacture) and one the Diploma in Gas Engineering (Supply). Copies of the Diploma Theses of the successful candidates have been deposited in the Library and summaries of them are published in the 18th Report of the Gas Education Committee.

The Charles Hunt Memorial Medals in Gas Engineering for 1941 were not awarded.

A number of students have, through certificates issued by the Institution, obtained temporary reservation as student engineering apprentices in order to complete their studies for the Higher Grade Examinations of the Institution. Facilities are now also available for students serving in H.M. Forces to continue their studies, and full information is given in the 18th Report of the Committee. The Institution continues to watch the position of students with regard to the requirements of national service, and information and advice may be obtained on application to the Secretary.

The Gas Research Board

THE Second Annual Report of the Council of the Gas Research Board (Communication GRB 4) records, *inter alia*, the formal constitution of the Board as a legal entity and the publication of its

Memorandum and Articles of Association. The Council has appointed a Membership Committee, and a number of gas undertakings and of manufacturers of plant and appliances have been elected to Ordinary Membership of the Board. Owing to the inevitable restriction of the Board's activities in existing circumstances the Council of the Board has decided to defer the election of individuals to Ordinary or Associate Membership.

The Board has continued to co-operate with Government Departments in the prosecution of the national war effort. Its programme of research investigations has been actively pursued, but it is unfortunately necessary to defer for the present the publication of detailed reports of this work.

The main investigation relative to the gasification of coal in hydrogen under pressure has reached a stage at which plans are being prepared for the erection, at the earliest opportunity and on a convenient site, of a semi-scale plant. A Hydrogenation Sub-Committee has been appointed to look after this work, and the Joint Committee with the Fuel Research Board, which has hitherto considered matters relating to gasification, is now concentrating its attention on methods for the synthesis of methane. Considerable progress has been made in this investigation, which is a part of the major problem, and semi-scale units of different designs have been installed by the Joint Research Committee and by the Fuel Research Board respectively.

The 32nd Report of the Refractory Materials Joint Committee (Communication GRB 5) deals in detail with the work of this Committee, and includes a report of progress in the investigation of refractories for gas and coke burning appliances.

Further work is being carried out by the Gas Research Board for the Mines Department on the production of reactive coke for portable gas producers. The Council of the Board is also examining the production of activated coke for use in open domestic fires.

The S.B.G.I.

THE President, Sir Francis Joseph, very kindly consented to remain in office during the year. The Emergency Committee has continued to meet at regular intervals, and the arrangement has worked both smoothly and efficiently under the Chairmanship of Mr. Ernest West, the Chairman of the Council.

It was inevitable that an Industry which had grown to maturity in meeting the needs of a great public utility service should be faced with many problems in the transitional stage from a peacetime to a wartime basis, but when it is possible to see the process in clearer perspective than is wholly practicable to-day, it is unlikely that there will be substantial disagreement with the conclusion that the change has been effected in a way which testifies convincingly to the inherent soundness of the structure as a whole, and to the skill and initiative of the individual firms which comprise it.

The past year has seen many problems resolved and, while the process is not yet complete and the position must, in fact, remain constantly fluid, a substantial measure of stability has at least been achieved between the duty of the Society's members to devote their productive capacity to the direct war effort, and their duty to assist the Gas Industry to make its total contribution to the war effort more fully effective. This progression from a peacetime to a wartime basis has been revolutionary as well as evolutionary, with Government policy as revealed by Government regulations acting throughout both as pressure and as resistance. Indeed, the adaptation of the complex mechanism of industry to the process of re-orientation is a greater tribute by far to the capacity of industry than to the wisdom of those whose fiats control the lines which industry shall follow. This is not said in any spirit of criticism—for there is general recognition that what has been done had to be done—but rather in praise of those to whose lot it falls to carry out instructions dictated by the necessities of Government policy, and at the same time to carry on maximum possible production. In so far as this has been achieved, and it has been achieved to a remarkable degree, the credit belongs to industry—both to employer and to employed.

The Society's concern was noted in our Review a year ago at the apparent lack of appreciation of the importance of the Gas Industry to the nation in wartime, and, moreover, doubt was expressed as to whether in fact in the exercise of the control of raw materials and of labour a sufficiently high priority was being accorded to Gas Industry business. It can, however, now be said that in the wider view which has latterly been taken of the prosecution of the war and the maintenance of vital services in relation to it, there has been a clearer recognition of the national importance of the Industry. In the spring of this year there was issued the Essential Work (General Provisions) Order, and as the result of representations which were made at that time by the Society, supported whole-heartedly and to good effect at a crucial moment by the British Gas Federation, all the Society's members engaged in what was regarded as essential work within the meaning of the Order—some two-thirds of the total membership in all—were nominated to be scheduled. This probably represented at the time from the point of view of the Society the most significant recognition that had so far been accorded to the national importance of the Gas Industry. Shortly after the issue of the Essential Work Order there was issued the Revised Schedule of Reserved Occupations and Protected Work, and this, as was to be expected, represented a further heavy drain on the labour reserves at the disposal of industry. Action was concerted between the Government Departments concerned and the Society, so that the immediate effects of the Schedule should be mitigated in cases of serious hardship, and the way was open for virtually all the Society's members to apply to be admitted to the Register of Protected Establishments, with the advantages which it carried. During the summer, negotiations which had been proceeding in regard to the priorities accorded to Gas Industry business reached a focal point in an approach from the British Gas Federation to the Chairman of the Production Executive. By and large, therefore, it can probably be said that the position of the Society's members has become stabilized to a reasonable degree, and if this stabilization represents no more than a bare margin either side of essential minimum requirements, at least much uncertainty which had hitherto existed was dispelled by the various developments which have been outlined.

In the early autumn, however, occurred the outstanding development of the year, referred to in greater detail elsewhere in this Review, when the President of the Board of Trade set up a new Division to carry out functions connected with the Gas and Electrical Industries. By the appointment of Dr. E. W. Smith as Director-General of Gas Supply, the Society lost one of its senior and most active members of Council who was in office at the time as its Hon. Secretary, but it was convinced that the Industry as a whole thus achieved a recognition of its status in the national economy in a manner which was instantaneously appreciated, and which gained in general approbation from the direction being in the hands of someone who had spent the whole of his active life in the Industry, and than whom nobody was more fully acquainted with its problems, nor more fully alive to its potentialities.

Supply of Materials

SOME months ago the scope of the Steel Distribution Scheme, which at that time had been operating successfully for over a year, was extended to cover iron as well as steel. The total supply of both iron and steel is now allocated by the Materials Priority Committee to the various Government Departments, and the Board of Trade in the case of the Gas Industry continues to be responsible for authorizations. The addition of iron to the Scheme has tended to simplify rather than to complicate it, and in fact it is an advantage to the Society's members that they should now be able to apply for their requirements of both iron and steel at the same time in a way to which they are already fully accustomed. The assumption by the Gas Administration Department of a new title, and the co-ordination of competitive interests in a new Department, have not in any way affected the ready approach which the Society and its members have always had to those whose concern it is to deal with their interests, and there have been many occasions during the year when a sympathetic ear has been lent to representations which the Society has made to the Board of Trade.

In the year ahead major adjustments will, however, clearly be necessary in view of the Government proposals for the further mobilization of woman-power and man-power to achieve the maximum national effort, and also of the growing demand for gas. To the problem of the reactions of these circumstances on the position of contractors and manufacturers the Society is already devoting its immediate consideration. Regulation 56A, with the exercise of wise administration, seems to offer scope within the Industry for some rational adjustment of resources and manufacturing capacities to requirement, and particularly if a judicious system of priorities is introduced and carefully controlled, and a balanced supply of labour and raw materials is maintained.

Export Trade

IT would not be appropriate to deal in this short review of the Society's work with the many and varied problems, whether matters of principle or of detail only were involved, which have been under consideration, but it can be said that throughout the year many such questions have received the careful attention of the Emergency Committee. In addition to the problems of to-day, thought has been given also to the problems of to-morrow.

Firstly there is the whole range of questions which have to be considered in relation to the future of our Industry at home, and it has been a matter of particular satisfaction to the Society that, following the constitution of the Gas Research Board, a Committee for Post-War Planning should have been set up by the British Gas Federation to study this problem in all its aspects, and that the Society should have been invited to nominate representatives to serve on this Committee. There is no more important work that can be undertaken at the present time in the interests of the Industry as a whole if we are to keep pace with, and indeed if possible attempt to exert some influence

upon, the plans that are being considered in relation to the national life and economy in the post-war world. Planning in the widest sense of the word is needed, however, not only to meet future possibilities but to meet as well immediate circumstances. The two cannot in fact logically be divorced if, as is to be hoped, the process in accordance with essentially British tradition is to be in the main evolutionary.

Secondly, there is the question of Export Trade. The Gas and Coke Oven Industries Export Group has continued in active operation. There is little doubt that the Export Group movement has come to stay, since it affords an essential link between the Government and the exporting industries. Some substantial overseas contracts, and particularly in the Dominions, have been secured during the past year, and their approval and the authorizations of raw materials to execute them have gone through the channels provided by the Gas and Coke Oven Industries Export Group. The immediate future of British export policy is, however, in a transitional stage at present for reasons which have been widely discussed in the last few months, and without embarking on an analysis of the position it can at least be said that the Export Groups provide a valuable medium for the exercise of such control as is necessary in the national interest. Moreover, it is the considered policy of the Government that the Groups should remain strong and, within such limitations as to markets in present circumstances as may be necessary, active.

In review, therefore, it is and remains the Society's conviction in regard to both home and export trade in these difficult times that we should prepare ourselves so far as possible for what is coming, being assured in great measure that those who are most adaptable will not only suffer least, but prosper most.

The B.C.G.A.

THE demands made on the British Commercial Gas Association during 1941 show that there is much useful work for this national body to do and that it is carrying out this work very satisfactorily. To every branch of the Association's activities the test question—"Will it further the war effort?"—has been applied, as a brief summary of some of these activities will prove.

In close co-operation with the Ministry of Food, for example, the Association has kept its members fully apprised of various means of supporting the National Food Campaign. As a result some 300 gas undertakings are now displaying over 400 official food information boards, a number of undertakings have established Food Advice Bureaux on their premises, and demonstrations are regularly held to educate the public in the best use of available foodstuffs. Undertakings are asked to make returns to the Association of the number of demonstrations held each month and the audiences attending, the figures being transmitted to the Ministry of Food. It is important, therefore, that the Association should be informed of all demonstrations so that the Industry's effort can be accurately gauged by the Ministry. The President of the Board of Education, for example, announced that recently audiences of 423,000 had attended gas cookery demonstrations arranged under the Food Education Campaign; this figure is based on the returns mentioned above, but is obviously short of the actual total contacted throughout the Gas Industry.

Considerable support, too, has been given by undertakings to the Fruit Preservation Scheme in which the Ministry of Agriculture is interested. The Association published a special booklet of recipes and instructions which was distributed by undertakings, and produced a window display which featured in about 200 gas showrooms.

In the late summer the Association's main publicity efforts were switched over to the National Fuel Economy Campaign. The Association has acted as a clearing house for the free publicity material issued by the Department, and has also offered a leaflet of economy hints of which to date some 3,000,000 copies have been taken by members. A considerable amount of supporting material—window displays, posters, an economy hints card, a lantern-slide and so forth—has been produced by the Association, and its suggestions for joint gas and electricity and for gas economy advertisements have been widely used. In all, over 16½ million pieces of fuel economy publicity material have been circulated by the Association to gas undertakings. Material for broadcasts and editorials on fuel economy have also been supplied to the Mines Department. In this work the Association has been acting in close collaboration with the E.D.A. and with the Mines Department itself.

Other Government Departments with which the Association has been in touch on certain aspects of its work during the year are the Salvage Department, Ministry of Supply (material stressing the value of the gas poker as a means of saving paper on firelighting was issued in the spring), and the Ministry of Information. About 200 undertakings are now regularly using the latter Ministry's national window displays.

Community Feeding

THE Association has been active, too, on the important subject of community feeding. A new gas film deals with one aspect of this subject, that of the factory canteen. "Eating at Work" was given a preview in London at which ten Government Departments and many organizations interested in large-scale cooking were represented; at the same time an exhibition of gas and dual-purpose equipment for community feeding was staged at Gas Industry House. Similar special showings of the film and this exhibit have been arranged at a number of cities in Great Britain. An issue of "A Thousand and One Uses for Gas," "Feeding the Nation," helped to show those interested how gas is being used to advantage in many British Restaurants. These, incidentally, now number over 1,000.

The Association's film library has enjoyed a very good year, with increased applications from borrowers of various kinds. These include not only the educational establishments and other bodies that were interested in documentaries before the war, but units of the Forces, hospitals, civil defence organizations, and other wartime groups of audiences. Gas films are also reaching audiences all over the country from the film libraries of the Ministries of Food and Information.

Advertising and Editorial Publicity

THE Association, in publications put out during the year, has always kept the idea of national service in the forefront, as some of the titles show.

National schemes of advertising have been absent, but short campaigns in selected media on canteen equipment and community feeding have had successful results. Late in the year a limited amount of advertising space was taken in technical journals to bring to the notice of industrialists the planned organization for research and information that lies behind every piece of gas-fired industrial apparatus. The Association also continued its pre-war services to members for the supply of material and layouts for local advertisements; a number of undertakings make regular use of these facilities.

The editorial field has become more restricted with the decrease in size of newspaper and magazines, but the Association has secured useful publicity for gas in articles and paragraphs on community cooking, paper salvage, food problems, fuel economy, the wartime uses of gas, and the by-products of gas-making, and other subjects. We may mention, too, the useful series of articles on publicity which have been appearing at intervals in the "GAS JOURNAL"; there are many points in these to interest everyone in the Industry concerned in any way with selling gas.

Internal Organization

IN strengthening its own internal organization the Association has taken the sound view that its work, to be fully effective, must be based on a free expression of local views, and be conducted to conform with local conditions. Steps have been taken, therefore, to strengthen the District Committees and to encourage regular meetings in the Districts at which current problems can be considered and a platform provided for full discussions on policy and activities.

Nor is the Association unmindful of the new problems that will confront the Gas Industry after the conclusion of hostilities. The Association is represented on the British Gas Federation Committee on Post-War Planning by its Executive Chairman (Mr. W. J. Sandeman), and Messrs. E. Crowther (Newcastle) and S. E. Whitehead (Southampton). This Committee was appointed as a result of a recommendation from the Association's Executive Committee to the Federation asking the latter body to consider the broad lines of post-war planning, and to delegate to the national organizations their duties in regard to investigations needed for the establishment of the Gas Industry's post-war policy, and the preparation of a considered statement of its services to the community for governmental consideration.

The Industry in Scotland

THROUGHOUT the year 1941 the Gas Industry in Scotland has continued to devote its maximum energy to the successful prosecution of the war, and has tackled with courage and endurance the many difficulties and problems that have arisen.

The meaning of the word "blitz" has now been brought home to us in Scotland, and in this connexion there should be recorded the great benefit and timely assistance obtained by the gas undertakings concerned through the Mutual Aid Scheme, which, although inaugurated at the outbreak of war, was not called upon to function until early this year.

Wherever possible, gas is made avaliable to the Services, and extensive use continues to be made of the many facilities for supplying gas to canteens, welfare centres, British restaurants, and community centres. In other cases, too, the domestic load has gone up, due to evacuation and the spreading of the population, and this has helped, in large measure, to balance the reduction in sales output created by the restricted production of gas appliances.

Perhaps the most serious aspect affecting the Industry in Scotland is that of coal, but despite the varied problems and difficulties which have arisen (and will no doubt continue to arise) from time to time, every endeavour has been made to keep supplies to gas undertakings up to the required level. It is appreciated that with the introduction of priorities and the ever-increasing difficulties of transport it is impossible for the usual coals to be supplied, and undertakings are co-operating wholeheartedly in making the best use of the coals available. The coke position is closely linked with that of coal, and although some delay was experienced in the initial stages of the Scottish Coke Association, it is gratifying to be able to report that the proposed levy has been accepted and contributions from undertakings are being received daily. Membership goes on increasing, and it is hoped the Association will soon be in a position to function to the benefit of all gas undertakings in Scotland.

Technical Developments

"In regard to technical developments during the year one has necessarily to approach the subject to an extent with sealed lips. Though one cannot write a great deal about them, it would be false to assume that the Industry has stagnated in the matter of research." This is quoted from our Review at the end of 1940. The statement applies at the end of 1941, and perforce we have to adopt the same attitude of approach. We could mention certain developments which, if made public, could not, in our view, help the enemy, but, of course, we willingly bow to direction on the matter; the direction remains firm. Research activities had to be curtailed in 1940, and curtailment has continued during the past twelve months, but, definitely, there has not been stagnation. While more research personnel in the Industry have applied themselves to immediate war problems remote from gas, considerable Gas Industry research, as such, has been pursued. Without disclosing "dangerous" results, we may indicate a few of the lines taken; we do so to give, as it were, a background effect to technical progress in our Industry in 1941—a background necessarily dimly lighted.

The second annual report of the Council of the Gas Research Board, just published, did not disclose much. In regard to the Joint Research Committee of the Board and Leeds University the main subject of investigation has continued to be the production of town gas by the partial or complete gasification of coal in hydrogen under pressure. Owing to "wartime requirements of official secrecy" a detailed report of the work could not be published. At the outbreak of war laboratory experiments had reached a stage when it became desirable to transfer the work on to a larger scale, but circumstances arising from the war made it impossible to proceed with the large-scale experiments. Until recently there appeared no immediate prospect of any improvement in the position. However, it has now been arranged that the plant which was to have been installed at the Fuel Research Station for the investigation should be transferred to and erected at a more convenient site where the requisite facilities will be available. A Hydrogenation Sub-Committee has been appointed to deal with the problem. In the meantime the investigation of the catalytic synthesis of methane has been actively pursued; two semi-scale units of different design have been erected.

Early in the year we had the report of the Arthur Duckham Research Fellow on the radiation from solid substances under flame impact. The investigation established the reality of the luminescent phenomenon at low temperatures. The existence of a luminescent radiation from solids in contact with flame is of significance as offering what appears to be the only hope of a considerable increase in the efficiency of light production from the combustion of fuel gases. Little attention has been given to it in the past, apparently on account of the unsatisfactory nature of much of the experimental evidence. It has been arranged to continue the investigation. A possible commercial application of one aspect of this work relates to the use of infra-red radiation in industrial drying processes. The Yorkshire Industrial Gas Centre has been interested in this question, and the Council of the Gas Research Board is at present in consultation with the Industrial Gas Centres Committee regarding the general industrial application of infra-red radiation.

Work has continued on the use of peat for the removal of sulphuretted hydrogen from gas. A detailed account of this work, undertaken by Imperial Chemical Industries, Ltd., was given in November last, and reference was made to the results in the "Journal" of Dec. 10. Now that supplies of Dutch bog ore can no longer be obtained, a cheap and readily available material to supplement burnt spent oxides and other oxides produced in this country is obviously of great interest and importance. The only essential modification of current oxide box practice necessary is the addition to the gas of a certain amount of ammonia to render the peat active. We discussed this important aspect on Dec. 10, pointing out that with the use of ammonia in the amounts needed for the purification of coal gas for town distribution the peat or peat-oxide mass accumulates ammonium thiocyanate. This is a corrosive agent, and may also affect the revenue from the sale of the spent material to the manufacturers of sulphuric acid. There are also the possible effects of ammonia slip to the purified gas on distribution and utilization costs to be considered. It has been suggested that, in future, work on the subject by the Gas Industry should not be to increase the ammonia content of the gas to suit some preconceived proportion of peat, but that we should take the gas as it is with its low ammonia content and should adjust the peat content of the mixture to give the best performance. In such a way a helpful contribution might well be made—and without any objection—to the conservation of iron oxide. As to the best proportion of peat, this may prove to be between 10% and 50% by volume in the mixture. Much attention, too, has, of course, been devoted to benzole extraction. We shall refer to this later under the heading "Tar Products," but we may mention here the article we published this month dealing with the plant on what, as far as we are aware, is the smallest works in the country stripping for benzole. The plant, costing, apart from labour, well below £100 has proved an attractive revenue producer, stripping comfortably 2½ gallons of crude benzole per ton from about 2,000 tons of coal carbonized per annum.

In regard to standby plant to cope with temporary interruptions in ordinary gas supply, we have seen the development of producer gas units of a capacity of 2 to 5 therms per hour which can be installed if required on the battery system. An investigation by the Gas Research Board (in collaboration with the Fuel Research Board and the British Coal Utilization Research Association) has involved the production at selected gas-works of trial batches of reactive coke for portable gas producers for road vehicles. It has confirmed that cokes having sufficient reactivity to be suitable as fuel for portable gas producers can be made from a variety of coals in commercial gas retorts. The production of reactive coke for the domestic open grate has also been under consideration. It has been shown that it is not necessary, in order to prepare alkali-activated coke, to mix the alkali with the coal before carbonizing; coke can be activated by impregnation after leaving the retort. To obtain the most reactive coke it is necessary to select from within a specified range the class of coal carbonized and to carbonize it under controlled conditions in continuous vertical retorts. The work which was started two years ago on refractory materials for domestic grates has been continued. During the past year an investigation has been made of the temperature gradients in the fire-back behind the open coke fire. Experiments have shown that the slag resistance of insulating bricks can be increased by suitable refractory coatings—work of importance in relation to the use of insulating bricks in small gas-fired furnaces.

Interest has been taken in the question of the alteration of the properties of coal tars by admixture of lime and the possible application of such tar-lime mixtures for various purposes, and also in the employment of soft pitch as a fuel. An improved specification for road tar has been drawn up by the British Road Tar Association in co-operation with the Department of Scientific and Industrial Research. Modern road tars are generally far in advance of the minimum requirements of the existing British Standard Specifications. Actually the Industry is working to the improved specification. In comparison with the existing specifications, the requirements of the new specification are in certain important respects more stringent. Also, three types of tar are specified. By asking for the appropriate type and viscosity the user is able to obtain a tar exactly suited to his requirements.

Coke

Development of the coke market during recent years and particularly during the past decade has had as its basis co-operation between supplier and distributor, and in this the London and Counties Coke Association paved the way to nation-wide organization. Without this pre-war energetic planning the position of coke during the war period, and particularly during the past twelve months, would have been much sorrier. It was fortunate that in the winter of 1940–41 machinery existed whereby plans for the most economical distribution of the coke supplies available—which were inadequate to meet demand—could be speedily formulated. The Gas Industry was able to work in full concert with the Ministry of Mines, and such matters as transport costs from one area to another and the incidence of such costs on the price of coke to the consumer were dealt with admirably. In the circumstances we got through a difficult winter tolerably smoothly. Stocks, however, were depleted by the winter's demand, while the requirements of the Government of coke for war purposes expanded, and it was soon apparent that without speedy action the position of the winter of 1941–42 would be, to say the least, unhappy. The cloud of possible rationing loomed dark and large. In the realization that transport was a key problem in the general situation, moves were made, and by the start of this winter hundreds of thousands of tons of coke had been transported to the places and areas needing the fuel most. This could not have been accomplished without the coke organization built up on such sound lines in the years preceding the outbreak of war. The successful efforts of the organization have had no little bearing on the fuel situation as a whole at the close of 1941.

During the year considerable strides have been made in regard to

the National Federation of Coke Associations, which body was formed at the beginning of 1939 and now comprises seven member Associations, with representation from Scotland and South Wales. The first annual report of the Association was published in the "JOURNAL" three months ago; it showed how well fitted the producers of gas coke now are to deal with all manner of problems as they arise and to speak with united voice. Technical research, publicity and propaganda, market development and price regulation, and co-operation with other associations interested in the production, supply, or use of fuel in general and coke in particular come within its ambit. When the Mines Department has authorized increases in coke prices it has been possible to negotiate them on a district basis in conjunction with the hard coke producers; and in this regard the recent formation of the British Hard Coke Association, representative of 98% of the total production of coke oven plants in the United Kingdom, is a welcome feature. The objects of the Association have been succinctly stated as (*a*) to provide for the organization and development of the hard coke industry, and (*b*) to maintain and develop stable and satisfactory relations with organizations representing gas coke production and other related industries and interests.

Pre-war it was demonstrated beyond doubt, notably by the L.C.C.A.—and we have no reason to suppose that the problems in its area, which covers a total production of coke of practically 4,000,000 tons per annum, are fundamentally different from those in other districts—that efficient selling could increase the revenue from coke, that merchants must be interested in its sales on an equitable business footing. It was shown that the business could be financed to advantage, that the revenue from coke could result in the offer of lower gas prices, that coke was not in competition with, but complementary to, gas. Those undertakings which took an active and enlightened interest in the business reaped a handsome reward. Conditions have changed since the war, but the truth of the proposition remains. The importance and possibilities of technical development, too, were clearly indicated, and it is good that the war has not resulted in neglect of this aspect of the coke market. In June last Mr. W. L. Boon, of the L.C.C.A., called attention—not for the first time—to the urgent need for standardization of coke grades and properties. His point of view and his contentions were expressed in an Institution Symposium Paper. For over five years now six standard sizes have been sold in the vast area of the L.C.C.A. Experience has indicated that all consumers' requirements of coke, whether for domestic or industrial use, have been adequately met by one or other of these sizes. Prior to the introduction of the standards at least forty different sizes of coke were produced and sold in gas coke markets in the South. There seems nothing to prevent consideration of this aspect of coke standardization being undertaken during the war period. During the year the Association has continued its good work in developing the use of coke for agricultural heating purposes; it was only last month that we announced the appointment of an Agricultural Adviser to the Association's technical staff.

In November last, Mr. R. W. Foot, whose Chairmanship of the London and Counties Coke Association and more recently of the National Federation of Gas Coke Associations has been of such outstanding value, was loaned by the Gas Light and Coke Company to the British Broadcasting Corporation, which he joined as General Adviser on the wartime organization. Mr. Foot has given his services to the L.C.C.A. over a period of eleven years, and it is good to know that he will be able to continue as Chairman of the Association in a consultative capacity, though he has had to relinquish executive control. Colonel H. C. Smith, who has been connected with the Association since its inception, and has been an active member of the Executive and Central Committees, has agreed to act as Executive Chairman, and is charged with full responsibility for conducting the affairs of the Association.

No note regarding coke during the past year would be complete without reference to the efficacy of the purely voluntary co-operation between all the solid smokeless fuel industries—the National Federation of Gas Coke Associations, the British Hard Coke Association, and the South Wales Anthracite and Dry Coal Committee. The three groups came into voluntary alliance by agreement on a common policy to further the development of solid smokeless fuels, and to strengthen the work which each group has been separately pursuing on parallel lines. The policy is not to employ restraint on any section of the organization but to engender bold vision and a spirit of exploration, which has already been translated into action to the common good of the industries and the consumers of their products. The industries collectively possess a strong and efficient research, technical, and service organization which, we feel sure, will prove of great worth in any planning and reconstruction programme.

By-Products

WE turn now to by-product ammonia. Home prices for sulphate of ammonia are "pegged," and remain the same as last year, representing an advance of 48s. per ton over the corresponding price of 1938–39. Farmers and agricultural merchants who were prepared to place orders early were accorded an early-booking rebate, ranging from 28s. per ton for July bookings down to 2s. per ton for bookings in December, 1941. The response to this offer was immediate, because it was necessary to announce by wireless that after a pre-determined date it would be impossible to book further orders having an early-booking rebate. Manufacturing costs of sulphate of ammonia have continued to advance, largely because charges for fuel, labour, repairs and maintenance, materials, &c., have continued to advance. But no increase has been made in respect of the higher cost of recovering ammonia.

Every ounce of by-product ammonia is required, but considerable wastage is occurring. Twenty years ago no gas engineer was content with a lesser yield of sulphate of ammonia than 30 lb. per ton of coal carbonized—that is, the equivalent of 7½ lb. of ammonia. Singularly few works are recovering more than 6 lb. (free and fixed combined) to-day. A "target figure" should be established. Where free and fixed ammonia are recovered one should aim at 7½ lb. of ammonia per ton of coal carbonized: where only the free ammonia is recovered, basing on the fixed ammonia being 25% as a maximum, 5.625 lb. of ammonia per ton of coal carbonized should be recovered. The gas-works throughout the country should be organized to attain the "target figure" indicated. Far too much weak gas liquor is being produced, and steps should be taken to raise this to not less than 1.5% (free) where steaming is practised, and to 2.0–2.5% where straight carbonization in horizontal retorts is undertaken.

Many improvised plants for the manufacture of concentrated gas liquor, 15–16%, of the Parrish type have been erected, and the production of concentrated gas liquor has sensibly increased. In many concentrated gas liquor plants the free ammonia only is recovered. One can understand that the fixed ammonia, under certain favourable market conditions, calls for attention. The direct manufacture of ammonium chloride, as practised by the Manchester Corporation Gas Department, and as described by R. Walker, and H. C. Applebee "JOURNAL" of Oct. 15), may evoke interest. The liquor from the hydraulic and foul mains is collected and circulated by pumping until the concentration of ammonium chloride reaches 10%. This liquor is then concentrated by evaporation, and the resulting crystals separated by centrifuging. A double-effect vacuum evaporator with nichrome tubes is recommended as the best form of concentration plant. The colour of the salt, when first produced, is satisfactory, but it rapidly darkens on exposure, because of the presence of higher tar acids. Attempts to improve the colour have so far been unavailing.

Agriculture has come into its own during the war. It has been estimated that to meet requirements for 1941/42, about 550,000 tons of sulphate of ammonia will be required, of which more than 500,000 tons will be for Great Britain, representing an increase of more than 30% over 1940/41.

Of interest is the recovery of ammonium formate, a valuable by-product occurring when a gas-scrubbing liquid containing ammonia and/or ammonium carbonate is used in a cyclic process for washing gas containing hydrogen cyanide, and when regeneration of the liquor involves the application of heat to it. The Gas Light and Coke Company, Hutchison, and Dryden, are responsible for a patent bearing on the recovery of the product in question.

Tar Products

As we foreshadowed in our review last year, a Controller of Tar Products was to be expected. The immediate effect of the Control of Coal Tar Order, 1941, was that the acquisition or disposal of crude coal tar, carburetted water gas tar, and producer gas tar was subject to licence by the Secretary for Mines, the Order giving the Secretary power to exercise a very wide measure of supervision over the whole industry and trade. Maximum prices for any of the materials, nationally or locally, could be fixed, and measures taken to prevent blending of coal tar products with other substances, and it was indicated that the treatment and disposal of coal tar products should take definite directions. The direct importation into Great Britain of any coal tar or coal tar products was excluded from the purview of the Order. This, apparently, was a duty assigned to the Import Licensing Department of the Board of Trade.

Benzole, distribution of which has been in the hands of the Petroleum Board, and toluole, which since the end of 1939 has been the subject of control, were also excluded from the compass of the Order.

That the new Control has had its problems cannot be gainsaid, although it is recognized that the Controller, Major T. Knowles, appreciated the economic complexities of the coal tar products trade, its wide range of both home and export markets, and it is conceded that he has acted promptly in granting licences and has fairly maintained an equitable wartime balance between producers and distributors on the one hand, and consumers on the other. Moreover, tribute has been paid during the year by the Chairman of the Colour Users' Association to his work in facilitating technical co-operation

with the tar distillation industry, and in general in acting as a clearing centre for problems affecting the industry.

That there have been complaints about the accumulation of tar at gas-works is known, but loss of continental markets for pitch has been the main factor, while ancillary causes have been the effect of enemy action and transport difficulties.

What seems to have been lacking is sufficiently energetic action to make pitch and tar products efficient substitutes of imported fuel oil. It has, however, been gratifying to note that the Coal Tar Control has been aware of day-to-day happenings, and has devoted much attention to the development of a scheme for the disposal of pitch and pitch-creosote mixtures. It is now known that one important oil-refining company intends to use pitch and pitch-creosote mixtures on a large scale. The Pitch Marketing Board and its lively officer, Mr. E. Brett Davies, have brought prominently before the technical world the practical aspect of using medium soft pitch, and his Paper, delivered before the Institute of Fuel in October last, calls for study. Technicians are now actively engaged in evolving equipment for bringing pitch into solution in creosote, and for rapidly and conveniently melting pitch so that boiler installations throughout the country can have recourse to this quality of fuel.

An indication of prices of products is less easy this year than hitherto. On several occasions during the year one has been asked to give a price for tar, but conditions have been such that it was next to impossible to indicate a figure. There has, however, been nothing to prevent a distiller conferring with his producer, to agree a fair price for crude coal tar over a period, and thus settling the matter. Several cases where this course was adopted have proved quite successful.

The year has witnessed refined tar selling at prices ranging from 3¾d. to 4d. per gallon; creosote has been realizing 4¾d. to 5d. per gallon; 60's crude carbolic acid 3s. 7½d. to 3s. 9d. per gallon; solvent naphtha, 95/160, 2s. 5d. to 2s. 8d. per gallon; pyridine, 90/160, at the early part of the year 15s. per gallon, and latterly 13s. 6d. Pure benzole has realized 1s. 10d. per gallon, toluole 1s. 10d., and pure toluene 2s. 5d. per gallon. Refined naphthalene has commanded £23 per ton in bags in the London district, and naphthalene salts 75s. to 80s. per ton. Some of the foregoing prices were, or have recently been, controlled. For example, naphthalene prices were fixed by Direction (S.R. & O. 1941, No. 1730) and became operative on Nov. 2. It was provided that "no person may dispose of any grade of naphthalene specified in the schedules to the Direction, to a buyer in Great Britain, at prices exceeding those indicated." The price of crystal and powdered naphthalene has been fixed at £23 per ton for 4-ton lots and upwards, delivered free in sellers' free 2-cwt. single bags to buyers in England and Wales. To buyers in Scotland the delivered price is 35s. per ton more. For powdered naphthalene the maximum prices are 10s. per ton more than for crystals. For hot-pressed naphthalene maximum prices are £11 3s. per ton, and naphthalene drained salts and whizzed naphthalene range from £6 6s. 8d. per ton for material melting at 50° C. to £9 7s. 6d. per ton for crude naphthalene with a melting-point of 78° C. and over. These prices are *ex* works.

Other controls have been instituted,—namely, anthracene and phenol operative on April 14, and latterly tar acids. For the purpose of the Direction, coal tar acids are defined as the constituents of coal tar, or of the distillates from coal tar which are soluble in aqueous caustic soda solution, and cresols and xylenols derived from any source other than coal tar. The Direction excludes phenol and phenol mixtures containing more than 80% of phenol, the disposal of which was brought under licence by means of a Direction made by the Secretary for Mines.

Directions have also been issued recently by the Board of Trade making it compulsory upon all gas undertakings and coke ovens with installed plants to treat *all* their gas for the fullest practicable recovery of benzole and toluole. These Directions followed a recommendation of the Advisory Committee on Benzole Recovery, which for over two years past has been placing its accumulated experience freely at the disposal of the carbonizing industry. Partial failure to get maximum results has presumably resulted in a measure of compulsion, in order to secure results more nearly approaching maximum possibilities.

Technical Literature

LITTLE space is left for a review of the technical contributions during the year. "Wartime Aspects of Benzole Recovery" was the subject of a Paper by Kenneth Sheard ("JOURNAL" of Jan. 22). In 1936, 20 million gallons of crude benzole were produced at gas-works in this country, yielding 12½ million gallons of motor spirit. This amount represents only about 1% of the total requirements. If all gas-works recovered benzole to the equivalent of the coke ovens, a further 20 million gallons of motor benzole would result. Statutory obligations as regards calorific value limit the extraction at many gas-works. Many benzole plants have been designed to recover 1½–2 galls./ton of coal carbonized, representing 50–60% recovery. The various components of these plants will admit of a further 15–20% recovery. How this can be effected is clearly outlined in the contribution in question. Additional oil circulation at 15°C. (against 20°C.), better heat exchange (inclusion of an exchanger working the vapour-to-oil principle ensures economy of steam in the final heater, and a reduction of overall water consumption), and improved supervision, are significant factors.

Better results can also be obtained by improving refining methods. In the treatment of liquid hydrocarbons with sulphuric acid difficulties arise owing to the formation of (i) a viscous sludge in the washing vessel, and (ii) stable emulsions with the water used for subsequent acid removal. These difficulties are minimized by removing the constituents boiling below 80°C. by distillation immediately after recovery of the hydrocarbons from the coal gas and subjecting the residue to acid washing without delay. This procedure is not always possible practically. According to B.P. No. 539,455 (South Metropolitan Gas Company, Bishop, Procter, and Twist), an aromatic amino or phenolic or nitro compound added as an inhibitor immediately the spirit is recovered renders its storage possible for considerable periods before the removal of the lower boiling constituents is necessary.

Interesting large-scale trials have been made to determine how far it is possible to use light vertical retort creosote in diesel engines. Although it is not possible to use this creosote without blending, the relatively large quantities of diesel oil imported suggest that there is ample outlet for creosote in this direction. A blend of 25% creosote and 75% normal petroleum oil was used in the engines of three buses, and the running was found to be satisfactory in every respect.

Other technical contributions and patents of interest are (*a*) benzole recovery by activated carbon; (*b*) recovery of benzole from carburetted water gas; (*c*) treatment of tar oils (Midland Tar Distillers—D. W. Parkes and R. B. Evans, patent No. 534,798); (*d*) tar for road-making (Midland Tar Distillers, patent No. 538,308); (*e*) benzole recovery by refrigeration; and (*f*) separating tar from tarry sludge (Woodall-Duckham, Wallin, and Whitworth, patent No. 526,143). Space, unfortunately, precludes more detailed reference to the foregoing.

Stocks and Shares

HAVING regard to all the circumstances, the values of gas stocks and shares generally, as compared with those ruling at the opening of the year, have been well maintained throughout, and except, perhaps, during the last few weeks of the year the volume of business has been on a larger scale than during 1940. Some falls have occurred of course, and among ordinary and preference stocks these have been wholly attributable to reductions in, or absence of, dividend disbursements—a position foreshadowed in our Review of 1940. It is true that very few companies have been obliged to pass their dividends, but the majority of these have been among the largest undertakings, and since it is believed that the average ordinary holding in these companies is a comparatively small one, a not inconsiderable number of investors have had to suffer losses in income. It should be stated, however, than even in those cases where ordinary and preference dividends have not materialized, debenture interest has invariably been paid.

In view of the yields obtainable, fixed interest stocks are particularly popular and their values have, in the majority of cases, closed the year anything up to ten points higher. In fact, the prices of several debenture issues now exceed their values at the end of 1939. As in the past, however, investors in this class of security have been loath to part with their holdings, and the supply of available stock has been getting steadily smaller as the year has progressed, with the result that at the present time long waiting lists of intending purchasers are the order of the day. This, it must be remembered, is in spite of the fact that no accounts are permitted to be published, and implies, surely, that investors have every confidence in the future stability of the Industry.

What this future will be, with a World War now in progress, it is impossible to forecast, but the Gas Industry is of sufficient national importance to warrant the belief that, where financial difficulties have arisen as a consequence of the war, alleviation in some form or another will be forthcoming.

Obituary

AT the gateway to a new year the names of those to whom the Gas Industry has had to say farewell during 1941 have to be recorded. This annual review gives us the opportunity of paying tribute to some of those who have given of their best in the interests of the Industry, and through the storms and upheavals of war their remembrance will be a lasting inspiration for the future. The whole Industry has suffered alike in the loss of a number of outstanding leaders in various spheres of activity. The passing of two Past-Presidents of The Institution of Gas Engineers has to be recorded; more than one world-famous combine has lost its chief, while toll has also been taken of undertakings both in this country and abroad.

Early in the year there passed away a well-known figure in Gas Industry circles who had endeared himself to many, Dr. Bernard Friedman, Managing Director of Ascot Gas Water Heaters, Ltd. To

his capacities as a technician and business organizer ample testimony is borne by the fact that "Ascot" is almost a household word throughout the land little more than ten years after Dr. Friedman began its manufacture.

In February the death took place of another prominent figure. For forty-three years Mr. Kenneth Aird occupied a conspicuous position in the Gas Industry, becoming Head Managing Director of R. & A. Main, Ltd., and Thomas Glover & Co., Ltd., in 1924. In 1927 he was appointed Chairman of the allied Companies.

An Institution Past-President also died in February. Coming of a "gas family," Mr. R. G. Shadbolt was Engineer, Manager, and Secretary of Grantham Gas Company for twenty-five years, until his retirement in 1920 to devote himself to private practice. Mr. Shadbolt's abilities were recognized by his election in turn to the Presidencies of the Manchester and Eastern Counties Associations, while in 1911 he attained to the highest position with which his professional colleagues in the Industry could honour him, President of The Institution of Gas Engineers. In this year he saw the formation of the B.C.G.A., and became the first President of the first body to undertake co-operative advertising in this country.

In the same month Mr. P. F. Holmes, a leading figure in another sphere of the Industry, died. He had only recently retired from his position as Chairman and Governing Director of W. C. Holmes & Co., Ltd. Mr. Holmes was also a Director of Bryan Donkin, Ltd., and he had been a Vice-Chairman of the Society of British Gas Industries, and a Vice-President of the B.C.G.A. In 1929, in collaboration with a fellow Director, Mr. Holmes gave to the Institution a fund for the purpose of endowing a scholarship tenable at Leeds University by a student taking a course in preparation for a position as a gas engineer.

Only a week later the Industry mourned the loss of another indefatigable worker in the death of Mr. H. C. Head, General Manager of the Winchester Water and Gas Company, and formerly a well-known consulting engineer. Mr. Head also took an active interest in the formation of the British Road Tar Association, of which he was the first Chairman and later Vice-President.

An authority on the construction of gasholders, Mr. F. S. Cripps died in April, and the Industry lost one who had had the distinction of designing the largest gasholder of its time in the world, and as Consulting Engineer to Bournemouth Gas and Water Company he built what was up to then the cheapest gasholder in the world. His book, *Guide Framing of Gasholders*, became a standard work.

One whose gift of personality and leadership brought him to the forefront of the Industry in Australia passed away in May. It was Mr. P. C. Holmes Hunt, who was first President of the National Gas Association of Australia in 1937. He had many other connexions with the various Australian associations, and for over twenty years he was consultant to the gas undertakings in Sydney, Newcastle, Adelaide, and Hobart.

In June Mr. Joseph Cash died in his 96th year. Mr. Cash's connexion with the Brighton, Hove, and Worthing Gas Company extended to 70 years. He was also a notable figure in the Parliamentary Committee Rooms and an expert engineering witness.

Another world-famous firm lost its Chairman in the same month. Sir Charles Herbert Smith, Chairman of Radiation, Ltd., died in June. He had for many years been a Director, becoming Chairman in 1939.

Only six months after he had retired from the position of Engineer and Manager to the Cardiff Gas Light and Coke Company, after 35 years' service, Mr. H. D. Madden's death in September came as a shock not only to his Welsh colleagues, but to the whole Industry, During his long connexion with the Gas Industry, this outstanding leader occupied many important positions for which his wide abilities well fitted him. He was President of The Institution of Gas Engineers in 1927, the first President to come from a Welsh undertaking, Chairman of the Executive Committee of the British Commercial Gas Association in 1939, and was on three occasions elected to the Presidency of the Wales and Monmouthshire Association of Gas Engineers. He was continuously on many of the technical committees of the Institution, and served on a number of committees of other bodies.

October marked the passing of Mr. E. P. Stevenson, whose valuable contributions to the Gas Industry abroad included the re-organization of the business and plant of the Primitiva Gas Company of Buenos Aires.

With the close of the year came the death, in harness, of Mr. James Bridge, Engineer, Manager, and Secretary of the Elland-cum-Greetland Gas Company for twenty years. Mr. Bridge had been a tireless worker in the interests of the District Associations. He had been Honorary Secretary of both the Manchester District and the Manchester Junior Associations, and was also President of the latter. In recognition of his important educational work on behalf of the Junior Associations he was elected an Honorary Member of the Yorkshire Juniors. And, finally, only a week ago we had to record the death of Mr. T. H. Poulson, Engineer, Manager, and Secretary of the Stafford Gas Department, who was President of the Midland Association in 1933.

Our obituary columns week by week have recorded the passing of many others who have served the Industry well and truly in their own spheres. The fact that space permits of the mention in this Review of only some of the better known names does not indicate any lack of gratitude to others who devoted their lives to the service of gas and of the millions who benefit by it every minute of every day.

Personal

Mr. T. B. LIVINGSTONE has been appointed Senior Technical Assistant to the Perth Gas Department. Mr. Livingstone was trained under Mr. J. W. Napier at Alloa and went to Hamilton as Technical Assistant in 1938. He remains Hon. Secretary and Treasurer of the Scottish Junior Gas Association (Eastern District) and in this connexion would particularly call attention to his change of address.

* * *

Mr. S. MASON, who has been Carbonizing Foreman with the Cambridge University and Town Gaslight Company for 18 years, has been appointed Manager to the Crediton Gas Company.

Obituary

The death has occurred of Mr. THOMAS GLANFIELD. In a lifelong association with the firm of Messrs. Willey & Co., Ltd., of Exeter, he was the oldest member of the commercial staff and was placed in charge of the commercial department. He subsequently became General Manager, and, when the limited company was formed, a Director, in which capacity he remained till his death. His eldest son, Mr. A. J. Glanfield, represents Messrs. Willey & Co. in the North-East of England, and Mr. S. G. Glanfield in the South Wales area.

* * *

As we go to press we learn with great regret of the death in a Nursing Home at Oxford of Mr. J. A. Morris, who for many years was Advertisement Manager of the "GAS JOURNAL" and was a Director up to the time of his death.

Letters to the Editor

The Title "Juniors"

SIR,—Referring to the letter from Mr. Le Fevre in your recent issue, I feel constrained to write because, as I think you know, I was one of the seven apprentices at Maudslay Sons & Field who founded the Junior Institution of Engineers in 1884, the President of which at the present time is Lord Sempill, A.F.C. You see the word "Junior" in the title is an adjective qualifying "Institution," and, of course, has no reference to the members of the Institution. Many members are now hoary of head or bald of pate, yet they have stuck to the Institution, in which they have formed many lasting friendships.

I suggest to the Junior Gas Associations, which are admittedly doing splendid service in the Gas Industry, to pause before considering the elimination of the word "Junior" in the respective titles of their Associations. Everyone knows that they are fulfilling in the Gas Industry a very important ideal. Their societies give their members the chance of learning to speak in public, to prepare Papers, to visit works (perhaps the most important feature of all), and in other ways to train themselves for entering the branch Associations and ultimately the Institution itself—surely praiseworthy ambitions. No Sir, let the Juniors go on as they have been nobly doing for years. They have won the sympathy of their Seniors in all directions, both in the manufacturing and in the professional spheres. They have received recognition at the hands of the Council of the Institution, who perhaps may arrange for each Junior Association to be represented upon the Board, if the suggestion were made to the Council. Who knows?

Yours, &c.,
WALTER T. DUNN.

72, Elphinstone Road,
Hastings.
Dec. 20, 1941.

Domestic Water Heating

SIR,—As a regular reader of your valuable publication the "GAS JOURNAL" I was naturally very interested in the Paper you published on Dec. 3 by Mr. L. Friedman giving the fullest data and recommendations to the Gas Industry in respect of future gas sales, and making a strong case for water heating by gas.

Mr. Friedman has evidently made a very exhaustive study of this question, and thanks are surely due to him for the hard work and effort he has taken, and to you, Sir, for publishing such useful details.

I would just like to add, as one of the original pioneers of gas water heaters, personally and on behalf of my firm, our sincere thanks to Mr. Friedman.

Yours, &c.,
EWART & SON, LTD.,
JOHN W. EWART,
Chairman.

346, Euston Road, N.W. 1.
Dec. 24, 1941.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.

For every size of works and every class of coal...

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CARBONIZING PLANTS

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440 carbonizing plants have been built or are under construction by West's in 24 countries. Working results from a wide variety of gas coals have established the high efficiency and adaptability of the West systems.

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Gas Products Prices

The London Market

Dec. 29.

Current prices of Coal Tar Products in the London market are about as under:

Pitch nominal; creosote 5d. to 5¼d.; refined tar 4d. to 4¼d.; pure toluene under the Ministry of Supply Toluene No. 2 Order 2s. 5d.; pure benzole 1s. 10d.; 95/160 solvent naphtha 2s. 5d. to 2s. 8d.; and 90/160 pyridine 13s. 6d.; all per gallon naked *ex* Makers' Works. By the Direction issued under the Control of Coal Tar Order, 1941, maximum prices have been fixed for all grades of Naphthalene. The maximum price for refined crystal naphthalene in 2-cwt. bags and in 4-ton lots is £23 per ton delivered.

The Provinces

Dec. 29.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 1s. 10d. (controlled by the Control of Toluene No. 2 Order, July 5, which fixes the maximum price at which this material may be sold). Coal tar, crude naphtha, in bulk, North, 11d. to 1s. Solvent naphtha, naked, North, 1s. 9d. to 1s. 10d. Heavy naphtha, North, 1s. 9d. to 1s. 10d. Creosote, *ex* works, in bulk, North, liquid and salty, 4¼d. to 4¾d.; Scotland, 4¼d. to 4¾d.; low gravity, 4¼d. to 4¾d. Fuel Grade, 4d. to 4¼d. Carbolic acid, 60's, 3s. 7½d. to 3s. 9d. Naphthalene, £15 to £20. Salts, drained, £6 to £6 10s.; whizzed 72°, £7 15s.; 78°, £9 5s. Anthracene prices fixed by Controller. Heavy oil: Unfiltered anthracene oil (min. gr. 1,080), 6d. to 6½d.; filtered heavy oil (min. gr. 1,080), 6½d. to 7d.; heavy anthracene oil gr. less than 1,080, 5½d. to 6d.

*In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10.

Tar Products in Scotland

GLASGOW, Dec. 27.

More activity is noticeable in this area and prices continue strong.

Refined tar is still in good call at 4¾d. to 5d. per gallon in home markets and about 4¼d. to 4½d. per gallon for export, both f.o.r. naked.

Creosote oil: Production is readily disposed of at the following prices: Specification oil, 5¾d. to 6d. per gallon; low gravity, 6½d. to 7d. per gallon; neutral oil, 6d. to 6½d. per gallon; all *ex* Works in bulk.

Cresylic acid remains difficult with values nominal. Pale, 99/100%, 4s. 9d. to 5s. 3d. per gallon; Pale, 97/99%, 4s. 3d. to 4s. 9d. per gallon; Dark, 97/99%, 4s. to 4s. 3d. per gallon; all *ex* Works in buyers' packages.

Crude naphtha shows no alteration at 6½d. to 7½d. per gallon *ex* Works in bulk, according to quality.

Solvent naphtha: 90/160 grade is firmer at about 2s. per gallon and 90/190 Heavy Naphtha is 1s. 6d. to 1s. 9d. per gallon.

Pyridines are quiet with 90/160 grade about 14s. per gallon and 90/140 grade about 16s. per gallon.

During the past twelve months employees of the Newcastle and Gateshead Gas Company have contributed £1,058 to medical charities, and the money has been distributed among various Tyneside hospitals, blind schools, and nursing associations.

Gas Stocks and Shares

The volume of business on the Stock Exchange last week was seasonally small, although the tone generally closed on a firm note. The gilt-edged market showed strength on the news of the India loans call-up and home rails were also quoted higher. The industrial market was comparatively inactive. Leading oil shares strengthened, while rubber and tea shares remained steady with a tendency to harden.

The Gas Market was well supported for a short week, and transactions were by no means confined to the stocks of the larger undertakings. Price changes were few, however, but all in an upward direction. There was a good demand for Corporation Stocks, and support for Gas Light 3½% debenture stock led to a rise of 4 points to 85½.

The following is a record of the price movements during the week:

OFFICIAL LIST

Gas Light & Coke 3½ p.c. Deb. ...	83—£8	+4
South-Eastern Gas Corporation Ord.	13/6—14/6	+-/6
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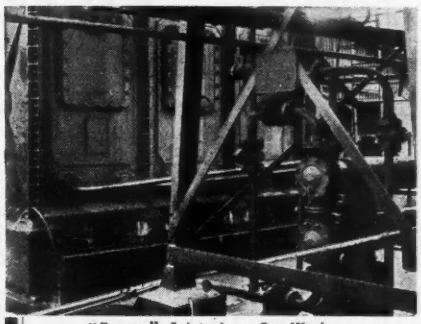
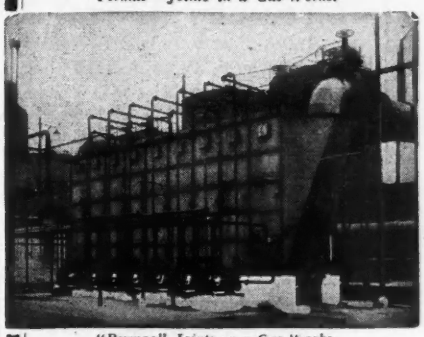
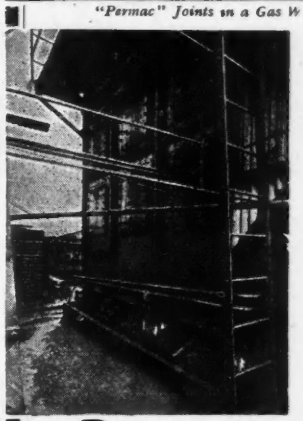


"Permac" Joints in a Gas Works.



"Permac" Joints in a Gas Works.



"Permac" Joints in a Gas Works.

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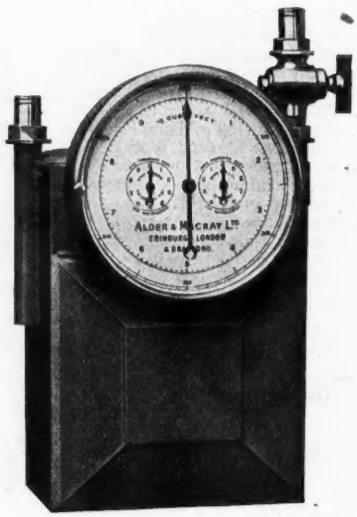

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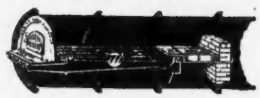

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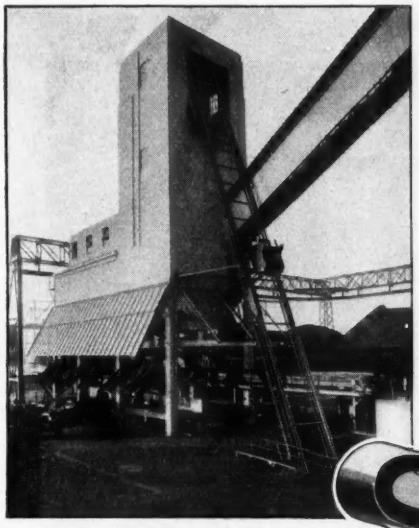

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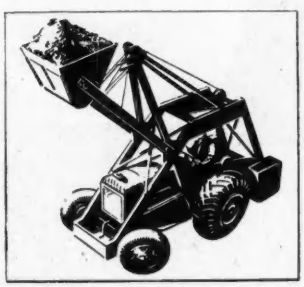

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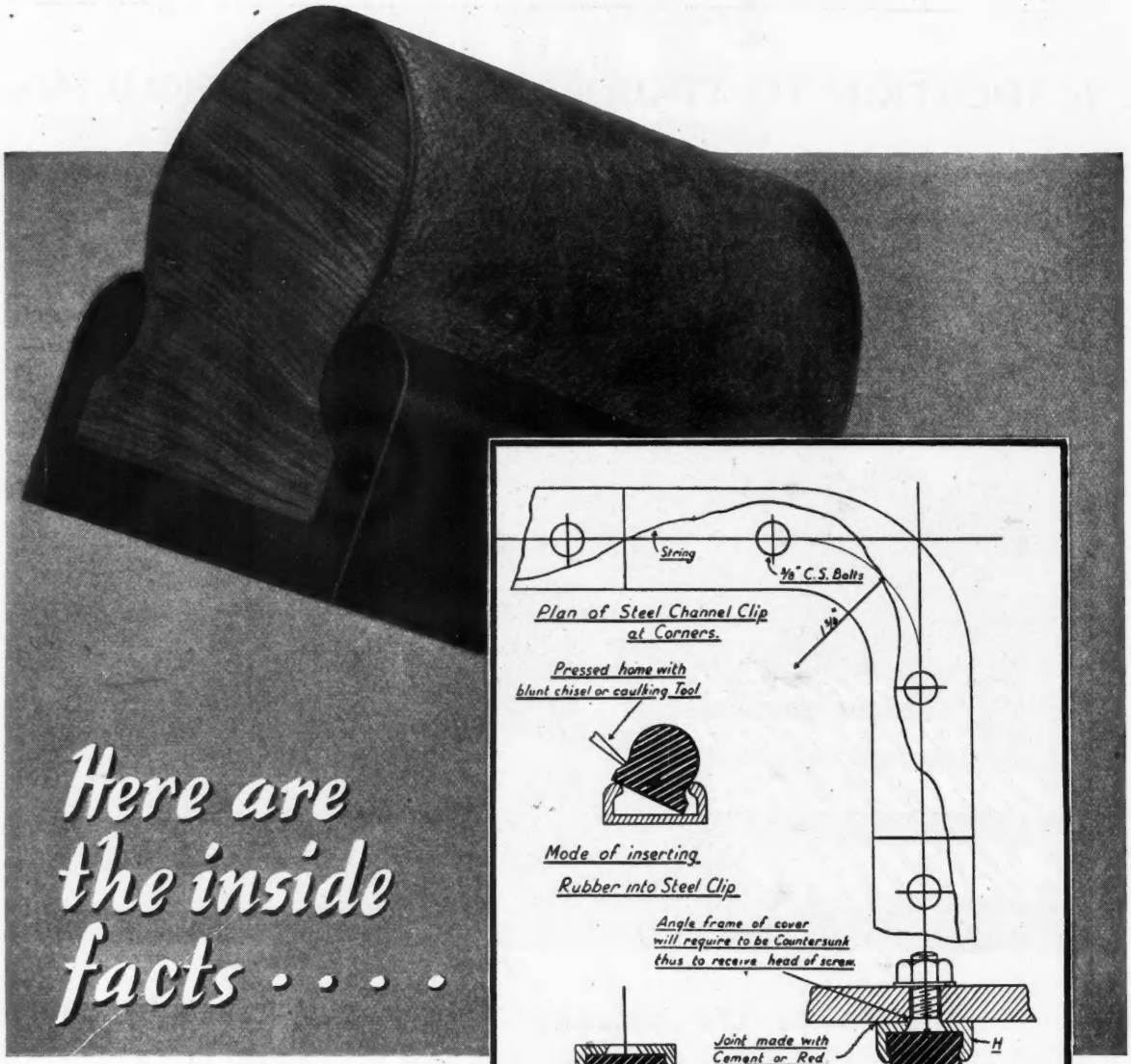
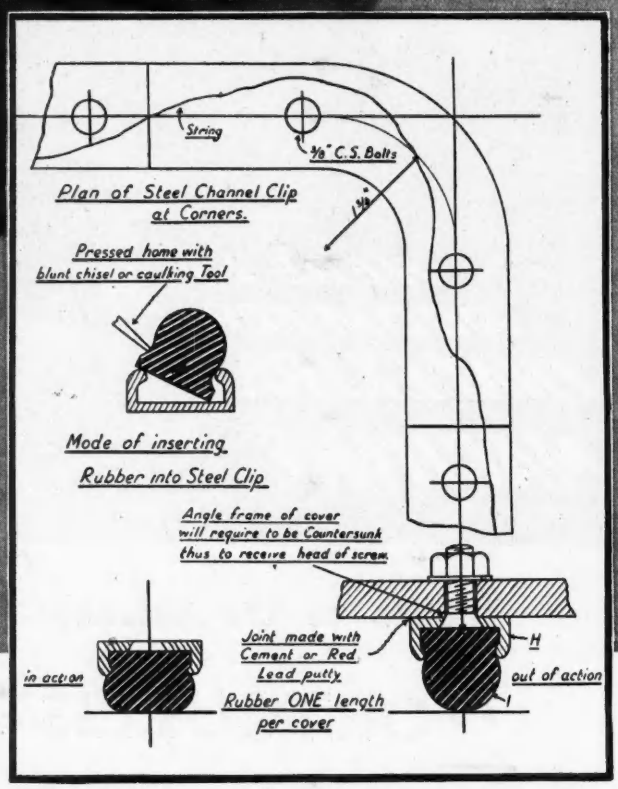


Here are the inside facts . . . .


String
½" C.S. Bolts
Plan of Steel Channel Clip at Corners.
Pressed home with blunt chisel or caulking Tool
Mode of inserting Rubber into Steel Clip
Angle frame of cover will require to be Countersunk thus to receive head of screw
Joint made with Cement or Red Lead putty
H
in action
out of action
Rubber ONE length per cover
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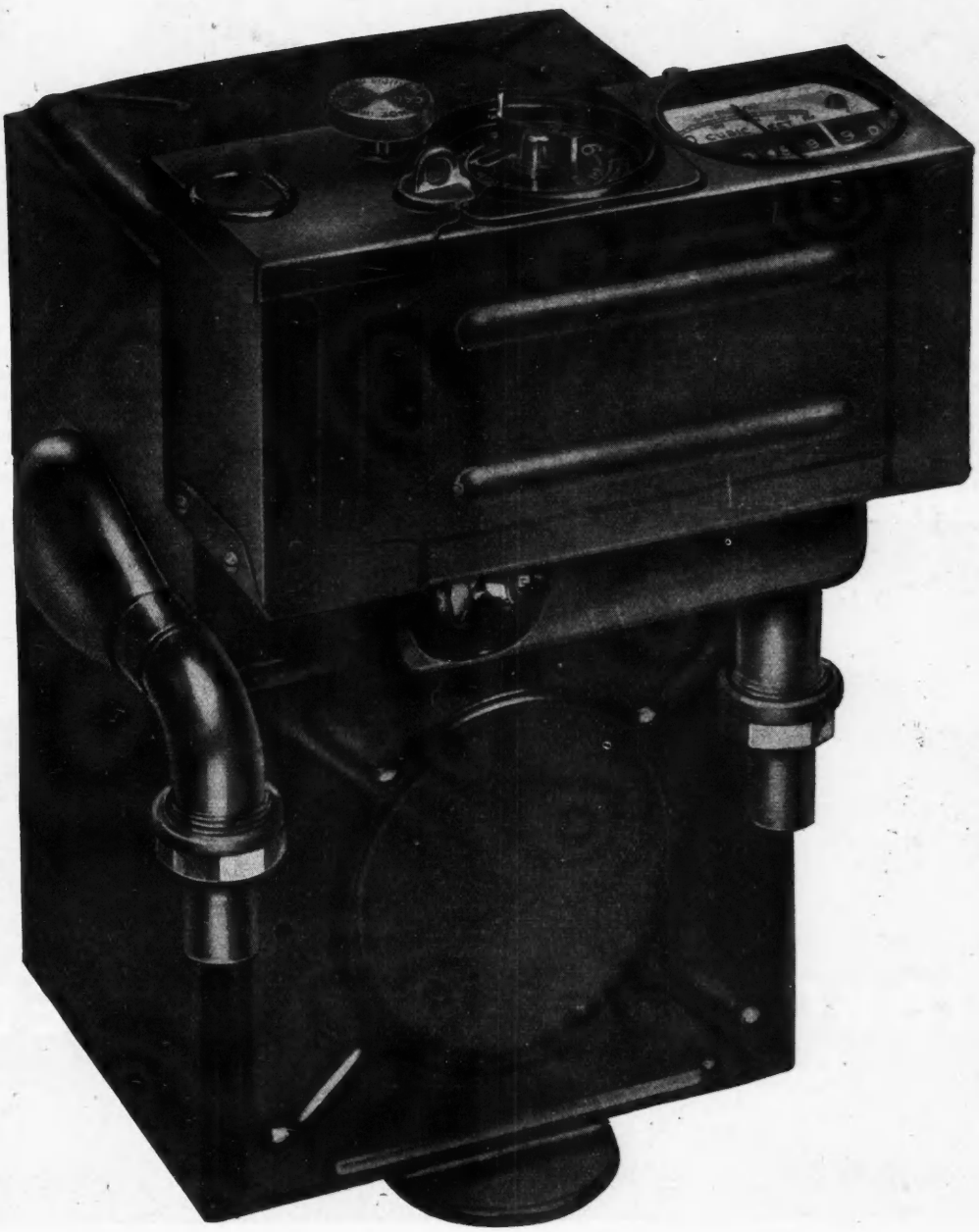

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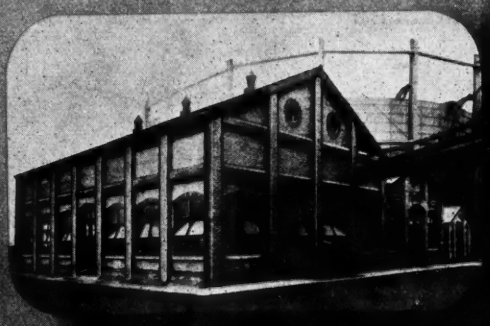

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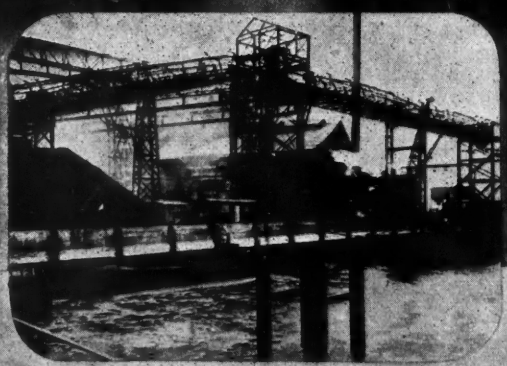

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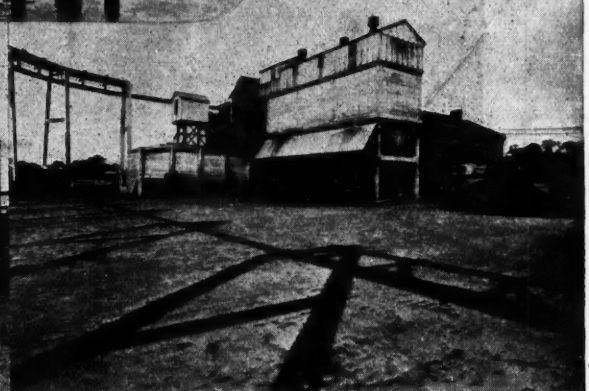

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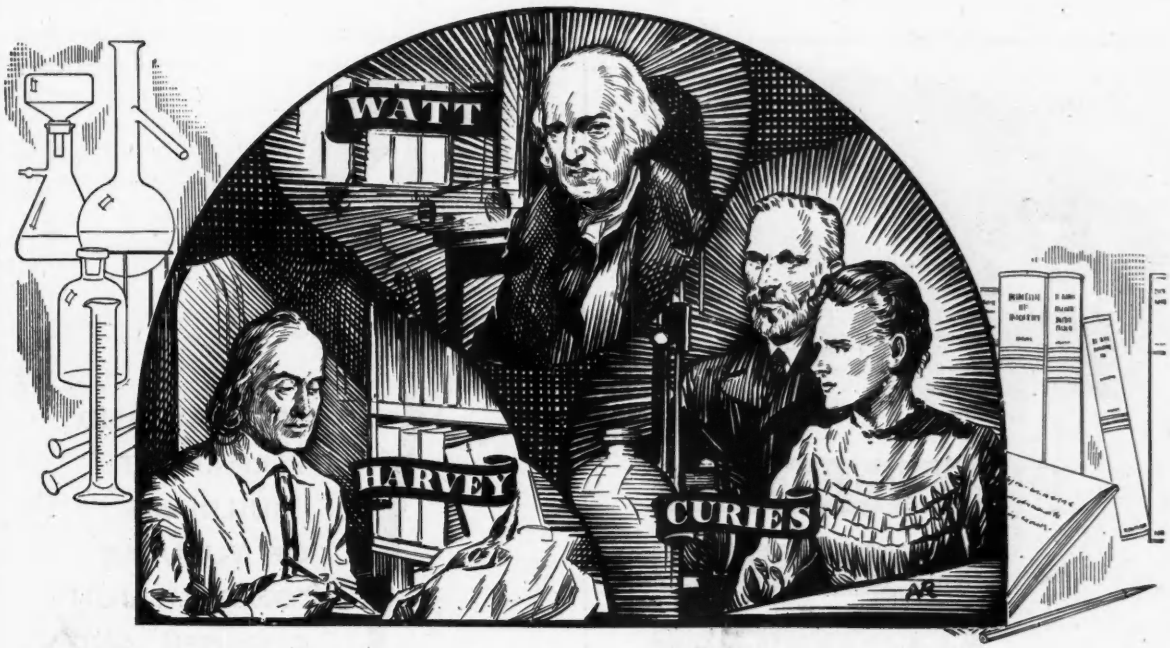

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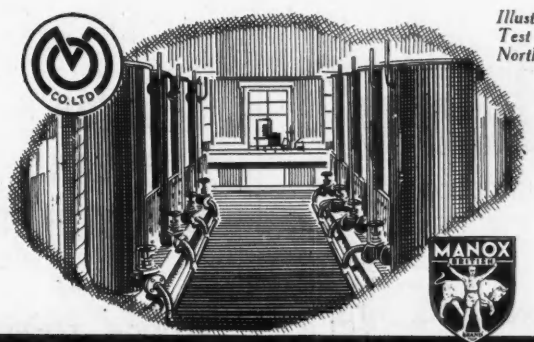

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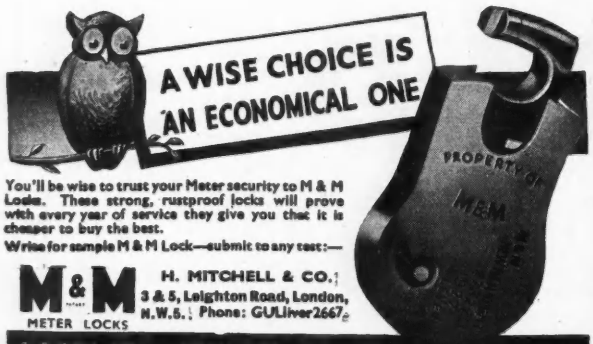

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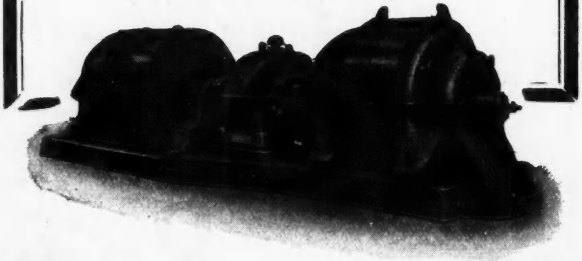

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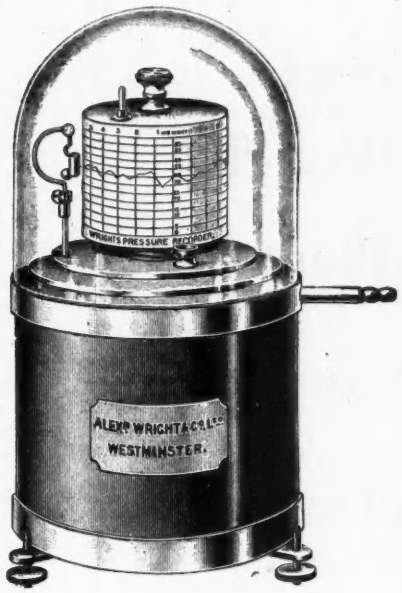

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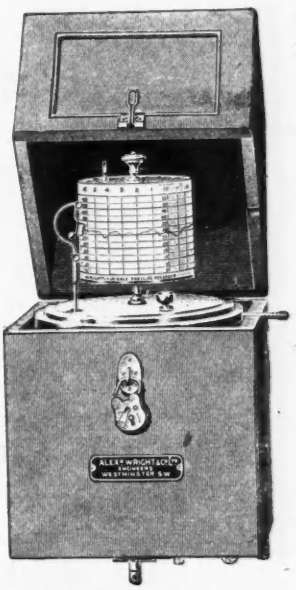

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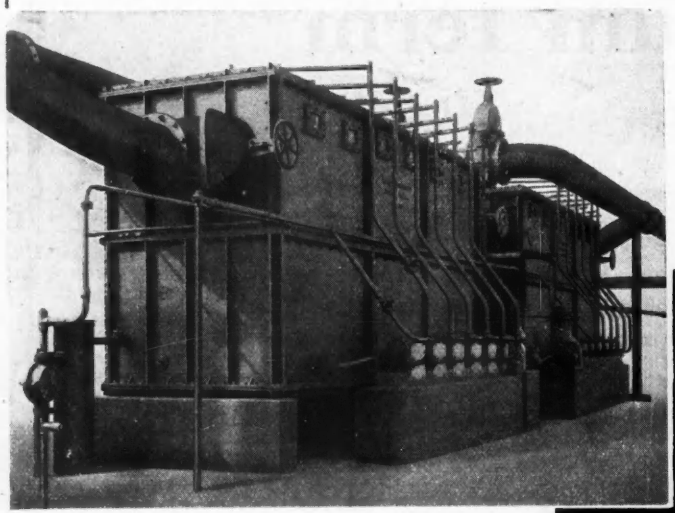

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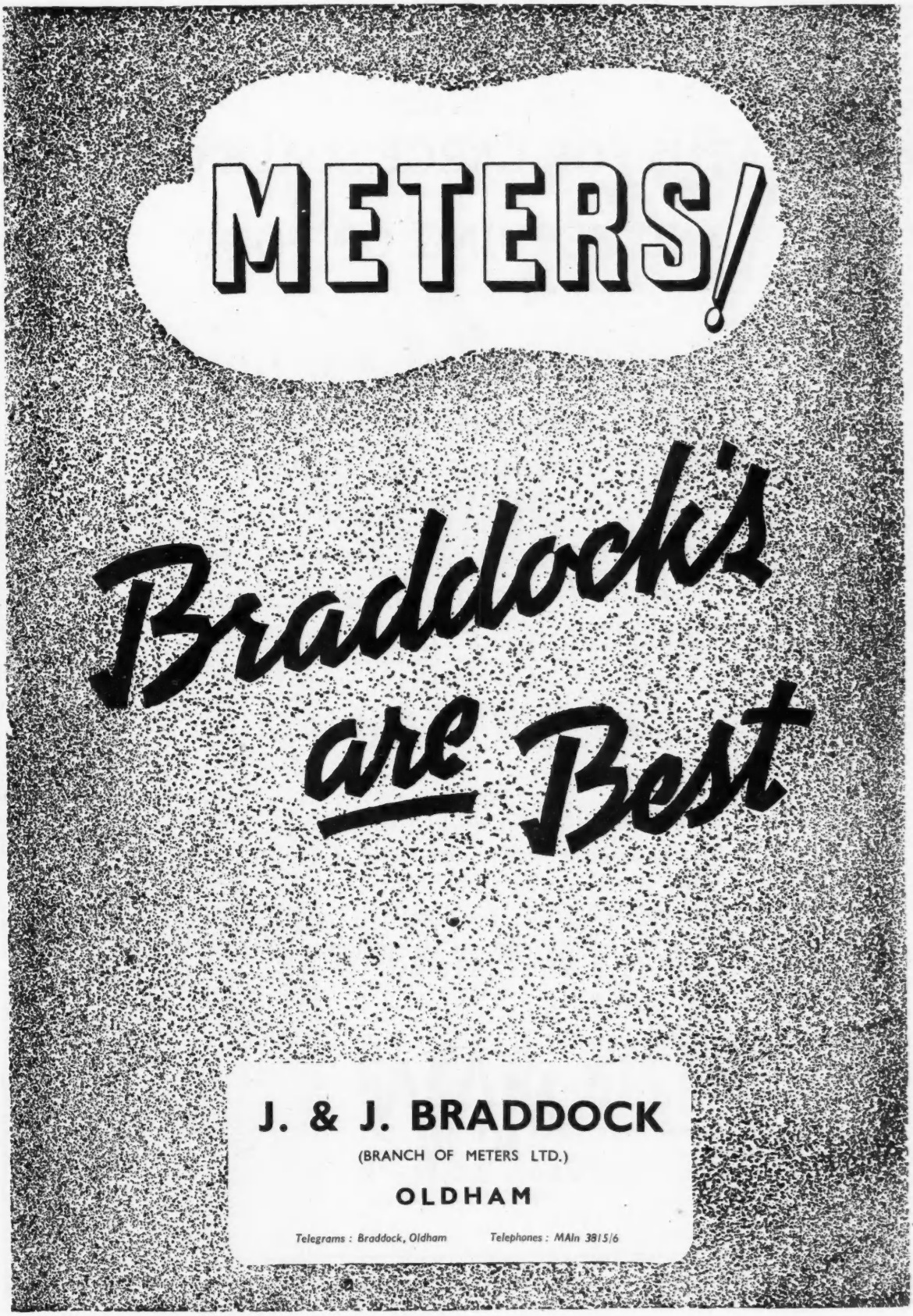
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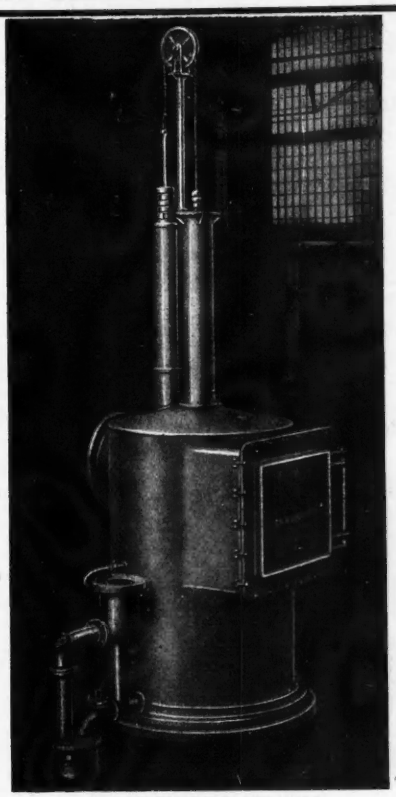

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TRANSPORT USERS

QUICKER, QUICKER AND YET QUICKER TURNROUND

BRITAIN needs 100,000 extra wagons and lorries to carry men and munitions, food and fuel, to serve the many needs of a nation at war. During these winter months the need is particularly urgent because the blackout slows down transport. These extra vehicles cannot be *built*, for there is a shortage of labour, materials—and time. But their equivalent *can* be provided by cutting down standstill and increasing running time—by speeding up loading and unloading of goods. Even 15 per cent. saved in this way by transport users will give the extra carrying capacity the nation requires.

Ask yourselves these questions

1—Have you planned to make labour available to load or discharge immediately? Have you arranged to load to capacity?

2—Have you installed labour-saving equipment to speed up loading and unloading? If this is not possible, have you improvised?

3—Do you help consignees by informing them, as far as you can, when the goods you forward may be expected to arrive?

4—Are your arrangements between your office and your loading staff as good as they should be? For instance, have you arranged for the immediate checking of loads?

5—Have you talked the matter over with the men who actually load and unload?

6—Do you make the most of every hour of daylight to clear loads, carrying on into the blackout when possible?

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Quicker Turnround

SPEED UP LOADING AND UNLOADING

Issued by the Ministry of War Transport

MENNO IMPROVED AUTOMATIC LUBRICATORS
SAFEGUARD MACHINERY BEARINGS
Simple to Fit and to Operate They give the Best Service Obtainable
RELIABLE RUNNING, WITH EFFICIENCY AND ECONOMY IN MAINTENANCE
Full Particulars from—
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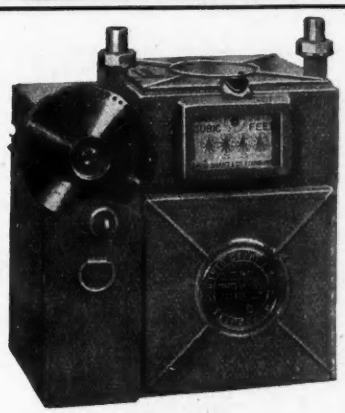

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DRY — Standard High Capacity and Small High Capacity
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ROBERT DEMPSTER & SONS, LTD., ELLAND, Builders of CARBONIZING PLANTS, both Horizontal and Vertical. Manufacturers of CONDENSERS, PURIFIERS, GASHOLDERS, &c., also every description of COAL and COKE HANDLING PLANT. *Telegrams:* "Dempster, Elland." *Telephone:* Elland 2241, 2242 and 2243.

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APPOINTMENTS VACANT

WANTED.—WORKING FITTINGS FOREMAN. Apply Manager, Stourport Gas Company, Stourport-on-Severn, stating Age, Training, Experience and Wages required.

WORKING FOREMAN required for 50 million Works in South-West Reception Area. Ability to undertake works repairs essential. Wages £5 per week. Apply No. 9195, "GAS JOURNAL," 51, High Street, Esher, Surrey.

APPLICATIONS are invited for the position of SHIFT SUPERINTENDENT (six-shift week) commencing at £260 per annum, plus War Bonus, at present £23 8s. per annum. Candidates, who must be reserved from military service, should clearly state position relating to Essential Works Order.

Applications immediately, stating Age, Qualifications, and Experience, with *copies* of two recent testimonials, to the General Manager and Secretary, Gas Company, 52, Sidney Street, Cambridge.

DUDLEY, BRIERLEY HILL AND DISTRICT GAS COMPANY

COOKERY DEMONSTRATOR

LADY WANTED to take charge of Home Service Bureau to deal with Ministry of Food advice work and give demonstrations. Similar experience essential. Commencing salary according to age and experience, approximately £200 per annum. The post will be a permanency.

Applications, which may be accompanied by *copies* of testimonials and stating Age, Experience, Salary Required, and when free to commence, should be received by January 7, 1942, by the Engineer and Managing Director, Dudley, Brierley Hill and District Gas Company, Spring Gardens, Dudley, Worcs.

HARROGATE GAS COMPANY

APPLICATIONS are invited for the position of CHIEF CLERK. Although preference will be given to applicants who are qualified accountants, and who have had experience in mechanized and Gas Company accounts, applicants with sound accounting knowledge and experience will be considered.

The position offers excellent prospects to the right man, and the commencing salary is £400 per annum plus War Bonus (at present £52 per annum) and Co-partnership Bonus, making total emoluments at present rates £476 per annum.

Applicants must give full details of Age, Experience, and Qualifications, and *copies* of two testimonials, and must reach the undersigned not later than January 10, 1942.

48, James Street, Harrogate. F. W. ALLUM, A.C.A., Secretary.

GAS-WORKS MAINTENANCE FITTER required for 400 Million Works in safe area. 47-hour week; full local engineering rates paid (*i.e.*, 1s. 7¼d. per hour), with opportunities for overtime. Applicants must be accustomed to the repair and maintenance of engines, boilers, pumps, &c., and should be capable lathe hands. Prospect of permanent staff appointment for a suitable applicant.

Address, No. 9196, "GAS JOURNAL," 51, High Street, Esher, Surrey.

EXPERIENCED CHEMIST required with thorough training for large Coking Plant in South Yorkshire. Applicants should state Age, Qualifications, Salary required, and the date they could commence duties, to No. 9199, "GAS JOURNAL," 51, High Street, Esher, Surrey.

BOROUGH OF STAFFORD

GAS ENGINEER AND MANAGER

APPLICATIONS are invited for the above position, rendered vacant by the recent death of the late Engineer and Manager, at a salary commencing at £800 per annum, rising to £900 per annum by increments of £25 per annum, plus a car allowance of £75 per annum.

The appointment will be subject to the provisions of the Local Government Superannuation Act, 1937, and the person selected will be required to pass a medical examination and reside within a mile radius of the Borough. The appointment will be terminable by three months' notice on either side.

Candidates must be fully qualified and Corporate Members of The Institution of Gas Engineers, and have experience in Vertical Retorts (preferably Glover-West), Carburetted Water Gas Plant, Benzole Plant, High and Low Pressure Gas Distribution, and Industrial Development.

Candidates should also state the earliest date when they can secure release and take up the new appointment.

Applications, stating Age, Qualifications, and Experience, accompanied by *copies* of not more than three recent Testimonials, to be sent to the Town Clerk, Borough Hall, Stafford, endorsed "Gas Engineer and Manager," so as to be received not later than January 16, 1942.

Canvassing will disqualify.

Borough Hall, Stafford. T. BROUGHTON NOWELL, Town Clerk.
December 24, 1941.

NORTH CHESHIRE AND DISTRICT GAS COMPANY

SENIOR TECHNICAL ASSISTANT

APPLICATIONS are invited from persons above military age for the above position. Applicants must be experienced in the control of vertical retorts and/or horizontal retorts with stoking machinery and be familiar with the usual gas-works tests and analyses. Experience in practical engineering and the control of men would be an advantage. Minimum commencing salary £247 per annum plus war bonus.

Raglan Street, Hyde, Cheshire. N. B. THOMPSON, Engineer and General Manager.
Dec. 22, 1941.

APPOINTMENTS VACANT (*continued*)

BOROUGH OF WIDNES

(GAS AND WATER DEPARTMENT)

DRAUGHTSMAN

APPLICATIONS are invited for the position of DRAUGHTSMAN in the Gas and Water Department at a salary of £270 per annum, rising by annual increments of £15 to £315 per annum (together with a war bonus when the salary does not exceed £300 per annum of 10 per cent., and when the salary exceeds £300 per annum of such amount as will make the salary up to £330).

Candidates must be well versed in the requirements of Gas and Water Undertakings. Preferential consideration will be given to applications from candidates who are Associate Members of the Institution of Gas Engineers, or who hold equal qualifications.

Applications, endorsed "Draughtsman," stating Age, Experience, and Qualifications, and accompanied by *copies* of three recent Testimonials, should be sent so as to reach the Gas and Water Engineer, Gas and Water Offices, Widnes, not later than noon on Monday, January 12, 1942.

Canvassing, directly or indirectly, will be a disqualification.

Town Hall, Widnes. JAMES WALLACE, Town Clerk.
December 26, 1941.

BOROUGH OF NELSON

(GAS DEPARTMENT)

APPOINTMENT OF TECHNICAL ASSISTANT

APPLICATIONS are invited for the Position of TECHNICAL ASSISTANT in the Gas Department, from persons not liable for military service.

Candidates should be experienced in the control of vertical retorts, benzole extraction, concentrated ammonia plant and the routine tests of a Gas-Works.

The commencing salary for the appointment will be £230 per annum (together with cost of living bonus at present amounting to £20 16s. per annum), rising by two increments to £260 per annum.

The appointment will be subject to the provisions of the Local Government Superannuation Act, 1937, and the successful applicant will be required to pass a medical examination.

Applications, stating Age, Qualifications and Experience, together with *copies* of testimonials, should be received by the undersigned not later than January 12, 1942.

Town Hall, Nelson. F. W. ROBERTS, Town Clerk.
December 20, 1941.

COUNTY BOROUGH OF OLDHAM

(GAS DEPARTMENT)

FIRST ASSISTANT CHEMIST

APPLICATIONS are invited for the appointment of FIRST ASSISTANT CHEMIST. The position will be, in the first instance, temporary, but has prospects of leading to a permanent appointment.

The position is graded £270, rising to £315, plus Cost of Living bonus as determined by the Council. The commencing salary will be according to qualifications.

The successful candidate may be required to pass a Medical Examination, and to contribute to the Superannuation Fund of the Corporation. The successful candidate will be required to reside in the Borough or in a district to be approved by the Corporation.

Conditions relating to appointments should be obtained from the Borough Gas Engineer, and applications, endorsed "First Assistant Chemist," stating Age, Qualifications and particulars of Training, accompanied by *copies* of three recent testimonials, should be sent to him at the Gas Offices, Greaves Street, Oldham, and received not later than first post Tuesday, January 20, 1942.

Canvassing or submitting testimonials from Members of the Council or of any Committee appointed by the Council will be a disqualification.

Town Hall, Oldham. THOMAS ALKER, Town Clerk.
December 19, 1941.

Amended Advertisement.

APPLICATIONS are invited for the Position of ENGINEERING ASSISTANT. Mechanical engineering training and experience with Vertical Retorts an advantage. Present output approx. 500 millions. Salary £356 4s. per annum inclusive of present War Bonus.

Applications desired immediately, clearly stating position relative to Essential Works Order and Military Service, Age, &c., together with *copies* of two recent testimonials to General Manager & Secretary, Peterborough Gas Company.

No. 9170.

APPLICANTS for the Position advertised under No. 9170 are THANKED and informed that a DECISION HAS NOW BEEN MADE.

UNDERPRESSURE!

Makers of the compact Patent (No. 473489).

SAFETY TEE

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Union Foundry, MANSFIELD.

Telephone: Mansfield 1256.

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FOR SALE.—Tar Tank 29 ft. by 5 ft. 6 in.; Fuel Oil Tank 25 ft. by 9 ft.; 75 H.P. Belliss High Speed Steam Engine; 10 ton Overhead Crane, 18 ft. span; Calorifier 7 ft. by 3 ft. diameter; Three Throw Ram Pump 5 in. by 8 in.

HARRY H. GARDAM & CO., LTD., STAINES.

FOR SALE.—RAILWAY WEIGHBRIDGE, 40 tons Platform, 16 ft. by 6 ft. 6 in. Two lever. Main diagonal lever fractured, otherwise in good condition. Repair may cost £75. Inspection arranged.

Tenders to No. 9200, "GAS JOURNAL," 51, High Street, Esher, Surrey.

FOR SALE.—SECOND-HAND METERS, 1000 No. 2 Standard Ordinary. In good condition, complete with couplings, stamped ready for fixing. Offers to Gas Company, Newcastle-upon-Tyne.

FOR SALE, in good condition, Four 15 ft. by 15 ft. by 5 ft. luteless PURIFIERS complete with 12 in. connexions, valves and travelling lifting apparatus. Offers to No. 9198, "GAS JOURNAL," 51, High Street, Esher, Surrey.

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For pumping water or other liquids.

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GREEN & BOULDING, LTD.

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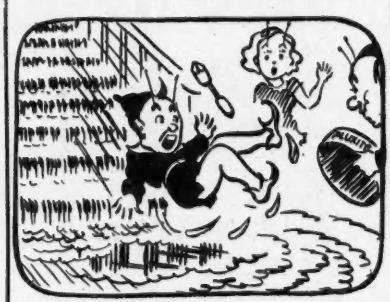

"What's this—a new sport? What a joy!"
"Yes, shooting the rapids," cried Ol.
"Oh hurry, please do,
With that FLUXITE," cried OO;
"That's the third time he's been down, poor boy."

For all SOLDERING work—you need FLUXITE—the paste flux—with which even dirty metals are soldered and "tinned." It does not "poison" the solder nor corrode the metal—and can be used with safety even on sensitive apparatus.

With Fluxite, joints can be "wiped" successfully that are *impossible* by any other method.

FLUXITE has been used for over 30 years in Government Works and by the leading Engineers and Manufacturers. OF ALL IRONMONGERS — in tins — 4d., 8d., 1s. 4d., and 2s. 8d. Ask to see the FLUXITE SMALL SPACE SOLDERING SET — compact but substantial — complete with full instructions — 7s. 6d.

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ALL MECHANICS *WILL* HAVE

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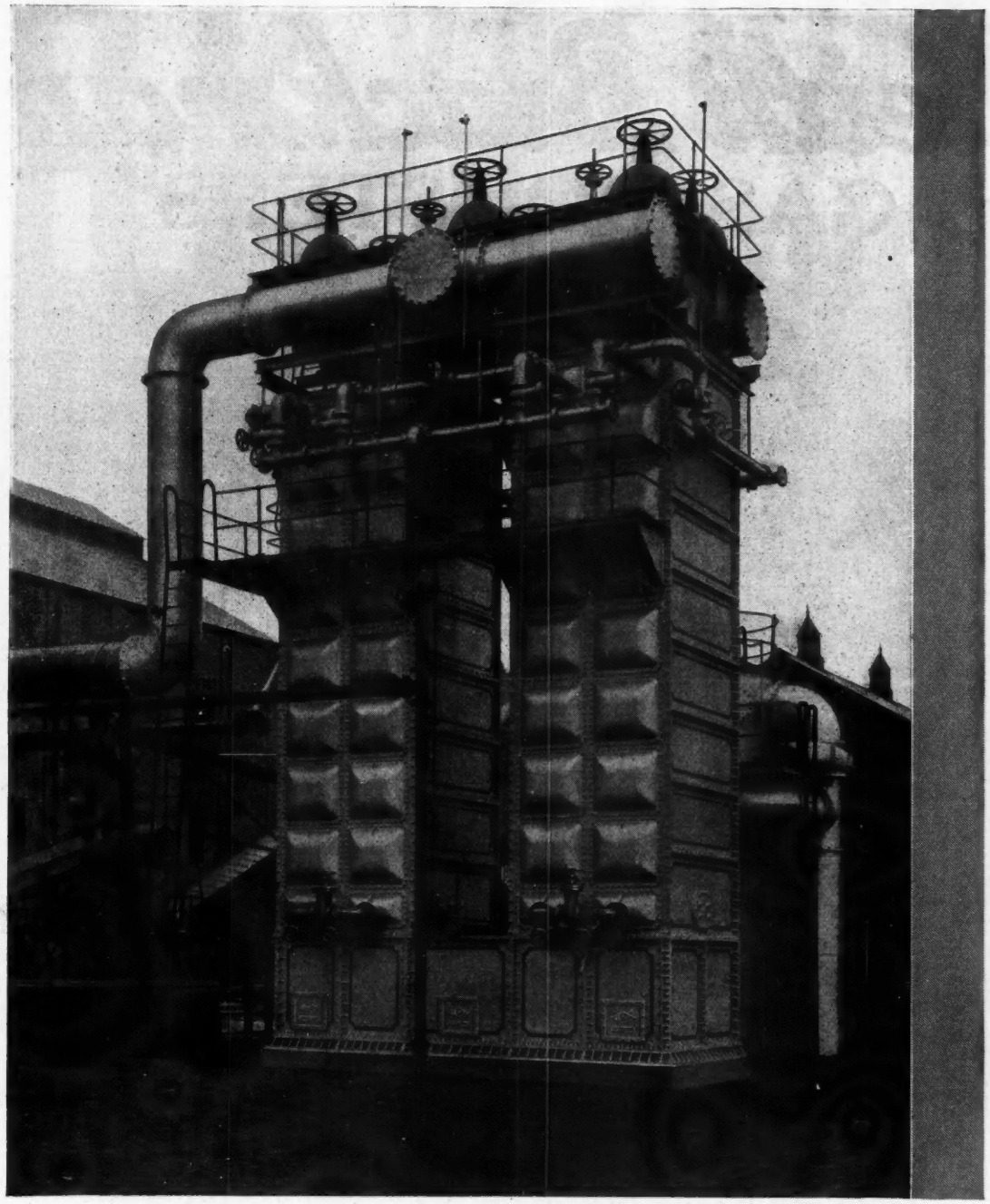
IT SIMPLIFIES *ALL* SOLDERING



Gas Condensers with combined Tar and Liquid Separating Chamber, capacity 8,000,000 cu. ft. of gas daily, installed at a Northern Gasworks. The Condensers illustrated are an exact duplicate of another set erected on the same works.

MODERN CONDENSING AND COOLING PLANT

by FOUNDED 1850 **HOLMES** HUDDERSFIELD

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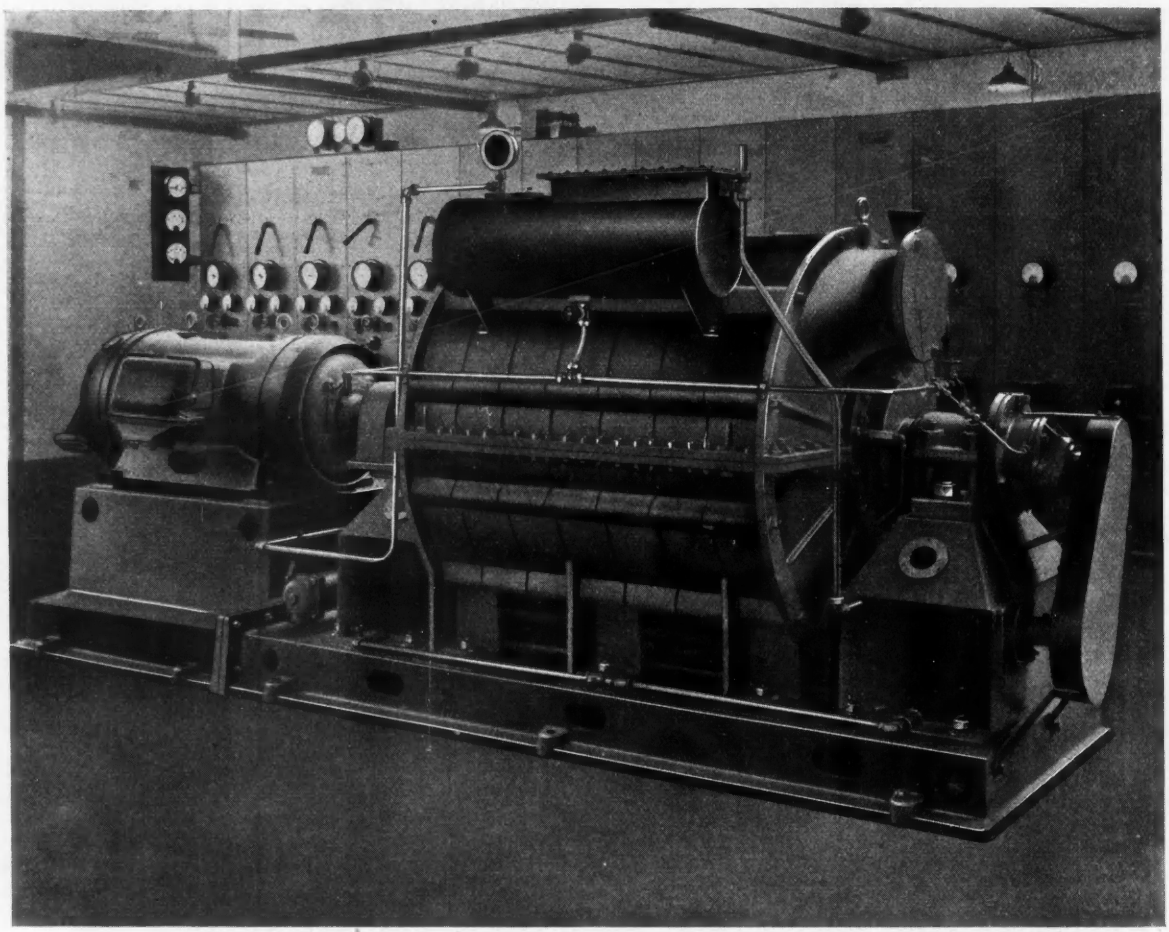
Keith Blackman
GAS BOOSTERS



KEITH BLACKMAN Gas Boosters are installed in numerous Gas Works in this country and abroad. They are made in various types and sizes for dealing with from 5,000 up to 1,000,000 cubic feet per hour. Added pressures can be anything within reason.

SEND us particulars of your boosting requirements, large or small, and we will advise you on the most suitable solution.

KEITH BLACKMAN LTD.
Head Office :
MILL MEAD ROAD, LONDON, N.17.
'Phone : Tottenham 4522 (12 lines)
'Grams : "Keithblac, Phone, London"

IF you would prefer to discuss your problem on site with a representative from the nearest of our many branch offices, we will gladly arrange a mutually convenient day and time.

Printed by Straker Brothers Ltd., London, E.C.2, for Walter King Limited, 11, Bolt Court, Fleet Street, London, E.C.4.—Wednesday, December 31, 1941.

B·K VACUUM GOVERNOR

Patent No. 395,443

SENSITIVE RETORT HOUSE GOVERNING WITHOUT 'RELAY'

- Reduction of inertia in working parts.
- Direction of tar deposition.
- Complete dust-proof enclosure.

BETTER CONTROL OF CALORIFIC VALUE AND CONDITIONS IN RETORTS WITH REDUCTION IN MAINTENANCE COSTS

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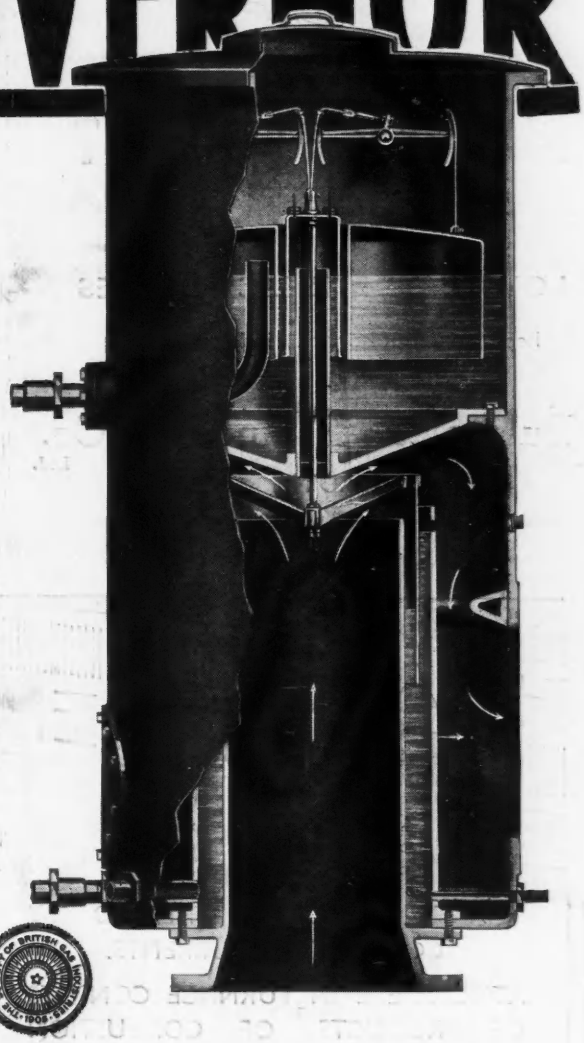

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Characteristics :

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Repeat orders testify to satisfactory service

Write for List 2446.

Pulsometer Engineering Co. Ltd.

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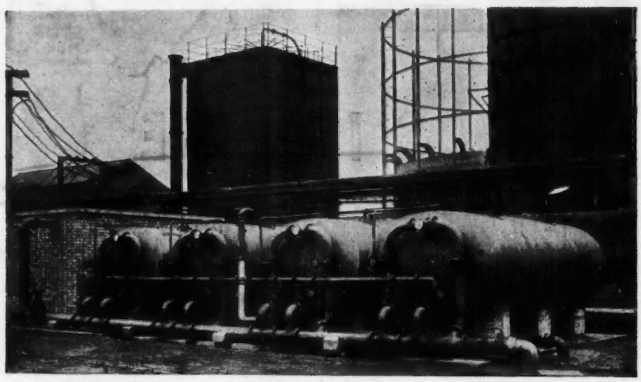

Filtration Plant in Gas Works treating 60,000 gallons of water per hour

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CHARGE UNIFORMLY HEATED BY CONVECTION CURRENTS.

ATMOSPHERE IN FURNACE CONSISTS OF PRODUCTS OF COMBUSTION THUS REDUCING OXIDATION TO A MINIMUM.

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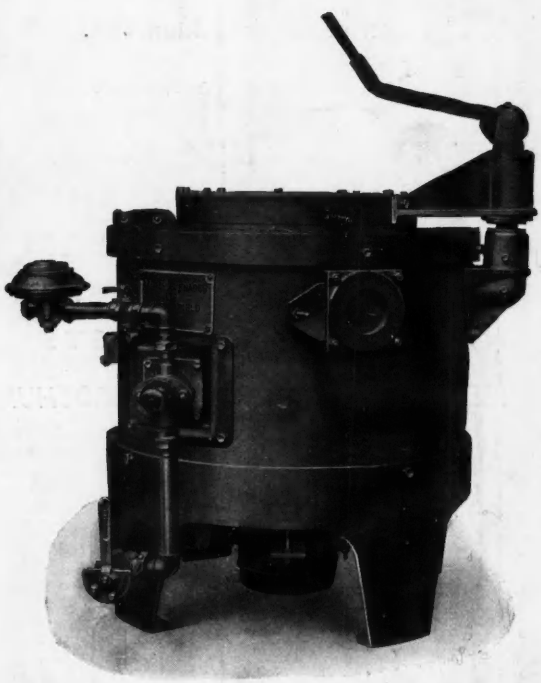
WORKING TEMPERATURES UP TO 650°C.



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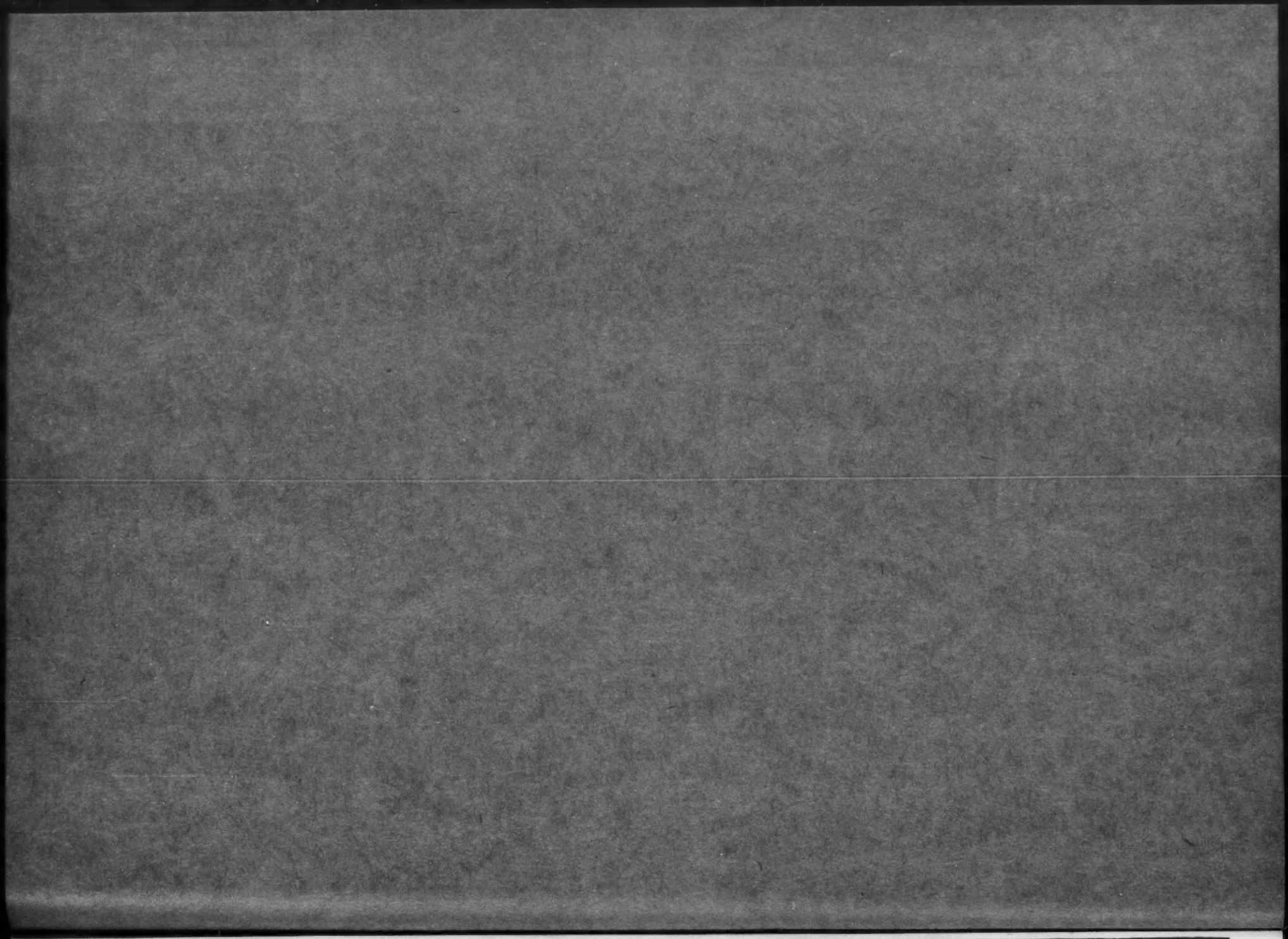
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